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WILLIAM BACKHOUSE OF SWALLOWFIELD.

By C. H. Josten.

The chief object of this paper is to throw further light on the origin and development of Elias Ashmole's predilection for Alchemy, a subject which held a very important, if not the most important place in his life, but which, for this very reason, seems to have deterred all modern historians from undertaking a comprehensive biography of him. But to collect the scattered information transmitted to us about the mysterious William Backhouse of Swallowfield may also in itself be worth while, for a man, whom Anthony à Wood commemorates as 'a most renown'd chymist' and as 'one eminent in his profession'[1] and to whom the unemotional Ashmole, even in his most private notes, reverently gives the name of father, certainly deserves our attention.

William Backhouse's descent[2] and family.

The earliest member of the Backhouse family of whom we know anything is William Backhouse's great-grandfather, Thomas Backhouse, 'of Whitrige in Com: Cumberland'[3]. A confirmation of arms granted to his son Nicholas,

[1] Wood, *Athenæ Oxonienses*, ed. Bliss, iii, 576, 577.

[2] For a complete family-tree I refer the reader to Ashm. MS 851, p. 20.

[3] See Ashm. MS 851, p. 20, where his entire progeny is given. He is also mentioned in Ashm. MS 858, pp. 185, 187.

William Backhouse's grandfather, on March 27th, 1574 [4], mentions that the Backhouse family ' longe tyme past did come out of Lancashere where they were of worshippful degree & did beare these tokens of honor '.[5] Nicholas Backhouse is referred to as ' of London Grocer ' and must have been a man of considerable wealth and standing, for, in 1578, he became Alderman of London and Sheriff [6]. His son Samuel, William Backhouse's father, was born in 1532 [7]. He may have been even more prosperous than his father, for, in 1582 [8], he bought the manorial estate of Swallowfield, Berks., about six miles to the south-east of Reading. His wife was Elisabeth, daughter of John Borlase of Little Marlow [9]. They had four sons, of whom William was the last, and three daughters.

Early life and studies.

Ashm. MS 332, a collection of horoscopes cast by Ashmole, informs us [10] that William Backhouse was born on January the 17th, 1593. It is likely that he was born at Swallowfield, because the horoscope given in that manuscript mentions the exact geographical latitude (51° 21′). His eldest brother John [11] was then nearly nine years old. The two other brothers [12] were still alive.

It is probable that William Backhouse spent his childhood at Swallowfield. His father was High Sheriff of Berkshire in 1598 and 1601, and, in 1603, he was

[4] Ashm. MS 858, pp. 185, 186.

[5] *Ibid.* The arms are : ' Geroundy of fower golde & azur a Salter humetie ermyns ', and the crest : ' on a torse golde & asur a close egle vert beaked & legged golde on a Serpent proper '. In 1579, the arms of Nich. Backhouse were altered and amplified. See Ashm. MSS 858, p. 187 and 840, p. 405. Harl. MS 1483, f. 66b, gives a trick of the altered arms : ' 1 and 4 quarterly, Azure and Or, in the first quarter an escallop Gold ; 2 and 3, Gules a saltire Or, a label of five points Ermine '. The Crest remained unaltered.

[6] Ashm. MS 851, p. 20.

[7] Ashm. MS 851, p. 20.

[8] Lady Russell, *Swallowfield And Its Owners*, London, 1901, p. 99.

[9] Ashm. MS 840, pp. 220–224, depicts various ' coates of Armes & Quarterings ' that Ashmole found at Swallowfield ' carved on Wainscoat & set on the Chimney piece in the greate parlour '. Among them are Elizabeth Borlase's arms quartered with those of nine other families from which she was descended. Ashmole gives a complete list of their names, so that it would not be difficult to trace William Backhouse's pedigree on his mother's side as well.

[10] p. 12 verso.

[11] He was born on June 26th, 1584 (*cf.* Ashmole's *Antiquities of Berkshire*, London, 1719, vol. ii, p. 375.) In 1615, he married Flower, daughter of Benjamin Henshaw, merchant tailor and silkman to King James I, of London. From 1625 to 1627, he was a member of Parliament, and in 1626 he became a Knight of the Bath. His monument in Swallowfield church praises him as ' vir omnigenae eruditionis, non levi tinctura imbutus, linguarum callentissimus, praecipue Germanicae, ... Litteratorum praesidium optimum '.

[12] Nicholas and Samuel. (*Cf.* Ashm. MS 851, p. 20). They were still alive in 1628, as they are then mentioned in their mother's will (*cf.* Lady Russell, *Swallowfield And Its Owners*, London, 1901, p. 107), but they both died unmarried before 1649, when William Backhouse succeeded to Swallowfield.

elected member for Windsor. In 1601, Queen Elizabeth visited Reading and William Backhouse's father had to go in state to meet her [13]. The only other fact known to us concerning William Backhouse's earlier days is his connexion with John Blagrave the elder. Lady Russell mentions, in her book on Swallowfield and its owners [14], that 'there is a curious MS written to him (William Backhouse) about this date (1610) by John Blagrave, the celebrated astrologer and mathematician, who lived at Southcot near Reading and had also a house at Swallowfield and land at Eversley. It is probable that it was this and similar communications that induced William Backhouse to enter deeply into the study of Rosicrucian Philosophy'. I very much regret that I have not been able to trace this document, which seems to prove that mystical studies already occupied William Backhouse at the early age of seventeen. John Blagrave died in 1611 [15]. According to Anthony à Wood he was esteemed 'the flower of mathematicians of his age' [16]. His books on astronomical instruments invented or improved by himself,—*e.g.* the *Mathematical Juwel*, the *Familiar Staffe* and the *Astrolabium Uranicum Generale* [17]—reveal him not only as a keen mathematician and astronomer, but also as a believer in Astrology [18]. It is possible, therefore, that John Blagrave awakened and fostered the mystical tastes in young William Backhouse. He may have been not only a friendly neighbour, but also a frequent visitor at Swallowfield, especially as his brother Anthony's wife (née Borlase) was a kinswoman of William Backhouse's mother [19]. In later years, the effects of Blagrave's influence may indeed have caused William Backhouse to study printed books on Rosicrucian philosophy, as Lady Russell suggests, but in John Blagrave's lifetime no such book had yet appeared.

In February 1610, William Backhouse, aged seventeen, matriculated at Christ Church [20]. He took no degree.

It is just possible that, about this time or later, he met Robert Fludd (1574–1637), who, in 1605, had also become a member of Christ Church and who was to be the most eminent defender of the Rosicrucian cause in England. Their mutual interest in Alchemy and related studies might easily have led them into the same circle of friends, but there is no evidence of their having been acquainted [21].

[13] Lady Russell, *Swallowfield And Its Owners*, London, 1901, pp. 101, 102.

[14] Lady Russell, *ibid.*, p. 124.

[15] D.N.B., vol. ii, p. 619.

[16] Wood, *Athenæ Oxonienses*, ed. Bliss, vol. ii, 96.

[17] A list of John Blagrave's works is given in D.N.B., vol. ii, p. 619.

[18] See *e.g.* John Blagrave, *The Mathematical Jewel*, London, 1585, pp. 44 *sqq.*

[19] *Cf.* Ashm. MSS 851, p. 2, and 852, p. 21.

[20] J. Foster, *Alumni Oxonienses*, 1891, vol. i, p. 53.

[21] Ashmole, at any rate, met Fludd in London. *Cf.* Ashm. MS 358, VII, p. 89, and W. H. Black's remark, col. 270 of his Catalogue of the Ashmolean MSS. Ashmole 'came first to London' in July, 1633, when he was seventeen years old (*cf.* Ashm. MS 1136, p. 177). Fludd died only in 1637.

Period from 1611 *to* 1633.

There is no direct evidence of William Backhouse's interest in Rosicrucianism, but Anthony à Wood (1632–1695) calls him 'a great Rosy Crucian' [22], and Wood may indeed have received some information to this effect from Ashmole, with whom he was personally acquainted [23]. The point must, therefore, be considered.

It is, in fact, likely that the famous German publications of 1612, 1614, 1615 and 1616, which purported to be written by members of the Rosicrucian Fraternity, excited William Backhouse's interest, as a renovation of the world by Alchemy is their principal subject [24]. They aroused a storm of embittered controversy and had their first echo in England in 1616, when Robert Fludd undertook his first public defence of the Fraternity [25]. I have explained elsewhere [26], why I think it improbable that an authentic Rosicrucian Fraternity connected with these publications actually existed. It may, therefore, be unwarranted to call William Backhouse a Rosicrucian, as this implies the idea of some kind of membership in an organisation. Like Fludd in his later years[27], William Backhouse may have regarded the Fraternity as a real, but incorporeal body, whose membership depended only on God's mercy. It is, however, uncertain whether Anthony à Wood's information does not refer to a membership of a secret society, who had adopted the Rosicrucian style and symbolism, after the original Rosicrucian documents had been printed.

Apart from family events [28], we know nothing of the two following decades of William Backhouse's life. We do not even know whether he resided at Swallowfield, after he had left Christ Church, and if so, whether he remained there after 1626, when his eldest brother, (Sir) John, succeeded to the estate. His translations of French alchemical works (see pp. 27-33 of this paper) seem to justify the conjecture that after leaving college he travelled for some time on the continent, as was customary for the young gentlemen of his time.

1633.—*The Magistery* and *Aquila & Serpens.*

The first vestige of William Backhouse's alchemical activities is a poem entitled *The Magistery* printed in Elias Ashmole's *Theatrum Chemicum Britannicum* (London, 1652), pp. 342, 343. It has, in my opinion, a distinct

[22] Wood, *Athenæ Oxonienses*, ed. Bliss, iii, 576 and iv, 355.

[23] *Cf. ibid.*, iv, 358, and Ashmole's diary (Ashm. MS 1136) passim.

[24] Especially: *Allgemeine und General Reformation der gantzen weiten Welt. Beneben der Fama Fraternitatis etc.*, Cassel, 1612, 1614, and 1615, and *Chymische Hochzeit: Christiani Rosenkreutz. Anno* 1459, *Regensburg*, 1616.

[25] Robert Fludd, *Apologia Compendiaria, Fraternitatem de Rosea Cruce suspicionis et infamiae maculis aspersam, veritatis quasi Fluctibus abluens et abstergens*, Leyden, 1616.

[26] C. Josten, *Truth's Golden Harrow*, Ambix III, pp. 98–101.

[27] *Cf. ibid.*, p. 101.

[28] Sir John Backhouse, William's eldest brother, (*cf.* note 11) succeeded to Swallowfield at his father's death in 1626. Mrs. Samuel Backhouse, their mother, died in 1630. Both have monuments in Swallowfield church.

poetical charm which is not to be found in all the alchemical poetry of its period. The poem is dated at the end 'December 1633' and signed 'W. B.'. Ashmole, in his own interleaved copy of the book (Ashm. MSS 971, 972), has spelt out in handwriting the full surname of Backhouse after the initial B., so that there can be no doubt about the authorship. As the *Theatrum Chemicum Britannicum* has become a rare book, the whole poem will be cited here :

THE MAGISTERY.

(1) Through want of Skill and Reasons Light
Men stumble at Noone day ;
Whilst buisily our Stone they seeke,
That lyeth in the way.

(2) Who thus do seeke they know not what
Is't likely they should finde ?
Or hitt the Marke whereat they ayme
Better than can the Blinde ?

(3) No, Hermes Sonnes for Wisdome aske
Your footesteps shee'le direct :
Shee'le Natures way and secret Cave
And Tree of lyfe detect.

(4) Son and Moone in Hermes vessell
Learne how the Collours shew,
The nature of the Elements,
And how the Daisies grow.

(5) Greate Python how Apollo slew,
Cadmus his hollow-Oake :
His new rais'd army, and Iason how
The fiery Steeres did yoke.

(6) The Eagle which aloft doth fly
See that thou bring to ground ;
And give unto the Snake some wings,
Which in the Earth is found.

(7) Then in one Roome sure binde them both,
To fight till they be dead ;
And that a Prince of Kingdomes three
Of both them shalbe bred.

(8) Which from the Cradle to his Crowne,
Is fed with his owne blood ;
And though to some it seemeth strange,
He has no other Foode.

(9) Into his Virgin-Mothers wombe,
Againe he enter must ;
So shall the King by his new-byrth,
Be ten times stronger just.

(10) And able is his foes to foile,
The dead he will revive :
Oh happy man that understands
This Medicen to atchive !

Hoc opus exiguum nobis fert ire per altum.
December, 1633.
W. B.(ackhouse)

Ashmole has added in handwriting, on the same page, the following Latin epigram :

Aquila & Serpens.
Accede ad Montem fons est mirabilis imo,
Ac ibi sub luce Jovis est sine veste Diana
Quae stigijs reditu facta est pulcherrima Lymphis
Hoc opus exiguum nobis fert ire per altum.

The last line of this strophe is the same as the Latin motto added to William Backhouse's poem. But the title *Aquila & Serpens* also seems to relate it to him. For the crest of the Backhouse family, as it was confirmed to William Backhouse's grandfather Nicholas (see footnote 5) is, in modern heraldic terms, an eagle displayed vert, holding by each claw a serpent on its back, the tail knotted. The same crest was used by William Backhouse himself (see p. 25 and Plate II, Fig. 3 of this paper), and the sixth strophe of *The Magistery* seems to have been inspired by it :

The Eagle which aloft doth fly
See that thou bring to ground ;
And give unto the Snake some wings,
Which in the Earth is found.

William Backhouse must indeed have been proud to have inherited a crest which lent itself to such alchemical interpretation. A note in Ashmole's secret shorthand on the margin against the sixth strophe of *The Magistery* (Ashm. MS 972, p. 243) reads *the landing falcon*. It seems to indicate that Ashmole too connected this strophe with the Backhouse crest.

In alchemical imagery, the eagle often represents the volatile or spiritual substance as opposed to the fixed or corporeal, represented by a serpent, a toad, or a dragon. It must have appeared a significant coincidence to William Backhouse that his crest thus seemed to be an illustration of the frequently cited alchemical advice :

' Si fixum solvas faciasque volatile
Et volucrem figas, faciet te vivere tutum ' [29].

[29] William Backhouse himself translated this verse from Solomon Trismosin's *La Toyson d'Or*, Paris, 1613. (See p. 32 of this paper). His translation of the two lines and of the passage preceding them runs : ' Many of y^{e} best phiers being at Unity in this opinion doe all agree in these or y^{e} like words. Dissolue & congeale in saying
If thou dissolue y^{e} fixt & make it fly
And fix y^{t} bird thou shalt liue happily '.

which also occurs in a slightly different version :

> ' Si fixum solvas, faciasque volare solutum,
> Et volucrem figas, faciet te vivere tutum ' [30].

It is possible to explain in greater detail, why the eagle preying on the serpent and the serpent singeing the eagle's wings with its fiery breath is not only an illustration of this well-known verse, but could be interpreted by William Backhouse and by Ashmole as symbolizing the entire alchemical process. Many authors have described the Philosophers' Stone as the conjunction of the struggling opposites of ' superius ' (spirit or soul) and ' inferius ' (matter) and have explained their conjunction as achieved by the interpenetrating forces of Dissolution and Coagulation. The *Liber Secretorum* [31], for instance, says :

> ' Sed haec solutio & congelatio, quas nominavi, sunt solutio corporis et congelatio spiritus, & sunt duo, & habent unam operationem. Quia spiritus non congelatur, nisi cum solutione corporis, & similiter corpus non solvitur nisi cum congelatione spiritus. Et corpus & anima, quando coniunguntur in simul, agit uterque eorum in suum socium, factum sibi similem '.

Basilius Valentinus [32] refers to the same conjunction of the opposites, when he explains the battle of eagle and serpent [33] :

> ' . . . . dico tibi in omni veritate, quod preciosissima aqua, qua sponsi balneum fieri debet, ex duobus pugilibus (intellige ex duabus contrariis materiis) prudenter magna cura conficiatur, ut adversarius unus alium propellat, adque pugnam habiles fiant, ac bravium obtineant : Non enim utile est Aquilae, nidum suum in alpibus ponere : Nam pulli eius frigore nivis in summitate montium morerentur.
>
> Quod si vero aquilae draconem frigidum, qui suam habitationem in petris longo tempore habuit, & ex terrae speluncis prorepit, addas, ambosque in infernalem sellam ponas, tum Pluto ventum afflabit, & ex frigido Dracone igneum spiritum volatilem eliciet, qui suo magno calore aquilae pennas comburet, ac sudorificum balneum excitabit adeo ut nix in summis montibus colliquescat & aqua fiat, quo minerale balneum bene praeparetur ac regi fortunam ac sanitatem tribuat '.

When the opposites (spirit and matter, volatile and fixed, fire and water) after fierce struggle have each adopted their adversary's nature ' in sella infernali '

[30] This different version, appended to Jean de la Fontaine's *La Fontaine des Amoureux de Science* (in *Le Roman de la Rose*, by Guilleaume de Lorris and Jean de Meun, Paris, 1735, vol. iii, p. 294) was also translated by William Backhouse (see p. 29 of this paper) :

> ' If thou dissolue y^e^ fixt, & make itt fly
> And y^e^ flying fix, thou shalt liue happy '.

The insignificant difference of the second version was conscientiously preserved in the translation.

[31] *Liber Secretorum Alchemiae Compositus per Calid filium Iazichi*, in *Artis Auriferae etc.*, Basle, 1593, vol. i, p. 330.

[32] Baslilius Valentinus, *Practica cum duodecim clavibus et appendice*, II. Clavis, ad finem, in Michael Maier, *Tripus Aureus*, Frankfurt, 1618, p. 32.

[33] Serpent and Dragon are synonyms in all alchemical texts.

or, as William Backhouse expresses it, ' bound in one room ', then, with the help of further heat, ' the Prince of Kingdomes three ' or the Stone of the animal, vegetable and mineral realms of Nature is born from the two substances now united. Eagle and serpent are fused into a winged serpent, a symbol by which this advanced stage of the process is often described [34]. The *Liber Secretorum* [35] comments on it as follows:

> ' . . . . compositio in hoc artificio seu magisterio, est coniunctio sive matrimonium congelati spiritus cum corpore soluto, & eorum coniunctio, & eorum passio super ignem. Nam caliditas est eius nutrimentum, & anima non dimittit corpus, nec cum eo coniungitur omnimoda coniunctione, nisi per mutationem utriusque a sua virtute & proprietate, & post conversionem naturarum suarum. Et haec est solutio et congelatio, quam prius Philosophi vocaverunt '.

As a further contemporary elucidation of the process symbolized by eagle and serpent, a passage may be cited from *Le Vraye Livre de la Pierre Philosophale du docte Synesius, Abbé Grec, tiré de la Bibliothèque de l'Empereur*, contained in P. Arnauld, *Trois Traitez de la Philosophie Naturelle non encore imprimez*, Paris, 1612. This particular treatise is chosen, not only because it describes this process as the one and only pattern of all alchemical operations, but also because—as will be explained later on [36]—it was translated into English probably by William Backhouse himself. This translation, contained in Ashm. MS 58, pp. 82–88, will, therefore, be printed here along with the French text:

Synesius, in P. Arnauld, *Trois Traitez de la Philosophie Naturelle* Paris, 1612, p. 99.

Premiere Operation,
Sublimation

Elle n'est point vulgaire, ains philosophale, avec laquelle nous ostons le surplus d'icelle pierre, qui en effet n'est, qu'elevation de la partie non fixe par la fumee, & vapeur, car la partie fixe doit demeurer au fond, aussi nous ne voulons pas que l'un se separe de l'autre, mais quils demeurent & se fixent ensemble. Et sache que celuy qui sublimera comme il faut, nostre Mercure philosophal, dans lequel est toute la vertu de la pierre, il parfaitra le magistere. Et pource dit Geber, Toute la perfection con-

Ashm. MS 58, pp. 79 *sqq.*

ffrst operacõn.
Sublimacõn

What is noways vulgar but phỹ^{all}, sublimacõn with w^{ch} wee remove y^{e} superfluousnesse of ye stone, w^{ch} is indeede y^{e} elevacõn of y^{e} not fixed parte of y^{e} fume & vapours of the fixed parte w^{ch} doth remaine in y^{e} bottom, but wee would not have them separated y^{e} one from y^{e} other but by y^{t} abidinge together they fixe each other. And knowe he that shall sublime the phỹ^{ers} ☿ (as he oughte) which hath all y^{e} virtue of our stone, he shall perfecte y^{e} maistery. Geber thearfore saieth all y^{e} perfecõn consisteth in sub-

[34] *Cf. e.g.* Michael Maier, *Atalanta Fugiens*, Oppenheim 1618, p. 65, Emblema XIV.

[35] *Liber Secretorum Alchemiae Compositus per Calid filium Iazichi*, in *Artis Auriferae etc.*, Basle, 1593, vol. i, p. 331.

[36] See p. 31 of this paper.

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PLATE I.

II. CLAVIS.

Fig. 1.—Michael Maier, *Tripus Aureus*, Frankfurt, 1618, p. 30.
The Second Key of Basilius Valentinus's *Practica*.

Fig. 2.—Elias Ashmole, Theatrum Chemicum Britannicum, London, 1652, p. 213.

siste en la sublimation, & en ceste sublimation sont toutes les autres operations, scavoir distillation, assation, destruction, coagulation, putrefaction, calcination fixation, reduction de teintures blanches & rouges procrées & engendrées en un fourneau & un vaisseau, & c'est le chemin droict iusque à la finale consommation, dequoy les philosophes on fait divers chapitres pour arrester les ignorans.

limacon, and in this sublimacon are all other operacons, that is distilacon, assacon, destrucc̃on, coagulacon, putrefacc̃on, calcinacon, fixacon, reducon of ye white and red tinctures procreated & engendered in one furnasse and on vessell, and this is ye righte way ouer to ye finall conclucon, of wch ye phỹers have diverse chapters to deceive ye Ignorante.

Sublimation, accordingly, comprises Dissolution and Coagulation as well as all other stages of the process, by which the Philosophers' Mercury is made into the Stone. To the knowing, all these stages are only one and the same operation. Eagle and Serpent, therefore, represent the Philosophers' Mercury as well as its sublimation and the Stone itself,—the matter, the method and the result.

This interpretation is confirmed by the illustration accompanying the second Clavis of the *Practica* of Basilius Valentinus in Michael Maier's *Tripus Aureus* [37], where Mercury wearing a crown (the young king) stands between two duelling knights. A serpent winds itself round the drawn sword of the knight on the left, while an eagle is sitting on the point of the sword of his adversary on the right. (See Plate I, Fig. 1.)

That Ashmole's own interpretation of the eagle-and-serpent symbolism was the same, seems to be proved by an engraving on p. 213 of his *Theatrum Chemicum Britannicum* [38], where an eagle-like bird is seen descending from the clouds on a double-headed dragon, who is flanked by Sun and Moon and by four kneeling sages on each side. (See Pl. I, Fig. 2.) The double-headed dragon represents the dual Mercury that is produced from Sulphur [38a] and the bird the influence of Sublimation. The adoring sages suggest that, here too, the sublimation of the Philosophers' Mercury, symbolised by eagle and serpent, is considered as representing the whole work. A very similar allegory adorns the title-page of the *Theatrum Chemicum Britannicum*; it is subscribed: ' Serpens et Bufo gradiens super terram, Aquila volans, est noster Magisterium '. (See Plate II, Fig. 4.)

It is nevertheless difficult to say, why Ashmole or William Backhouse,—or whoever the author may be,—gave the title of *Aquila & Serpens* to the four

[37] Michael Maier, *Tripus Aureus*, Frankfurt, 1618, p. 30.

[38] This engraving is not reproduced in Ashmole's own interleaved copy of the book (Ashm. MSS 971, 972).

[38a] *Cf.* Michael Maier, *Viatorium, hoc est De Montibus Planetarum septem seu Metallorum*, Oppenheim, 1618, p. 56: ' . . . . Draco symbolum est & subjectum proprium Mercurio, ... , quia constituit duplicem Mercurialem substantiam Hermaphrodyticam contrariarum operationum '.

Latin lines, which Ashmole added to *The Magistery* in handwriting, if it was not for the simple reason that they also concern the matter, method and result of the alchemical process. Indeed neither an eagle nor a serpent occur in these four lines. But the beginning ' Accede ad montem fons est mirabilis imo ' sounds reminiscent of the *Verses Belonging To An Emblematicall Scrowle: Supposed to be invented by Geo: Ripley* printed in Ashmole's *Theatrum Chemicum Britannicum*, p. 378, which mention the winged serpent:

' On the Ground there is a Hill
Also a Serpent within a Well
His Tayle is long with Wings wide,
All ready to fly on every side '.

The winged serpent, as I have explained, represents eagle and serpent conjoined. I have not, however, been able to establish the exact connexion between the mythological contents of the Latin strophe with the eagle-and-serpent-symbolism by any evidence from contemporary alchemical writings. My own tentative interpretation is as follows:

Heavenly Jupiter, Diana's father, is often represented as an eagle. Styx may stand here for the opposite infernal principle, elsewhere symbolized by the serpent. Diana, who is heavenly Luna and, as Hecate, has also an infernal aspect, may mean here the result of the happy conjunction of both principles, or the true matter of the Stone (' sine veste ') in an advanced stage of perfection [39]. But this remains a conjecture [40]. The well, at any rate, appears to represent Latona, Diana's mortal mother, who was changed into a well by Jupiter, in order to fulfill her wish for immortality. Michael Maier, in his *Septimana Philosophica*, Frankfurt, 1620, p. 53, explains this symbolism of Latona's well as follows:

> ' Rex ille Apollo est, sive Sol; & Diana, Luna, eius soror; fons vero Latona habetur, mater eorum. Cum enim a Iove ingravidata Latona mortalis perennitatem peteret, Iupiter, ne votum omni ex parte ei denegasse videretur, postquam geminum eum ediderat foetum, Apollinem & Dianam, Latonam in fontem perennem mutavit, qui cum sub terra se abscondisset, a virgine provocatus est in aspectum & usum mortalium. Filii itaque in materno fonte gaudent se lavare, qui ipsis pro potu & nutrimento quoque est, ne alio indigeant victu: similia enim a similibus facile attrahuntur, & in se invicem, nempe nutrimentum in nutritum transeunt. Hic fons vocatur ab aliis lac virginis; lac, quia lactis vicem praestat; virginis, quia virginibus praebeatur, vel ab aliis, ut dictum, inventus est '.

[39] Pernety, *Dictionnarie Mythohermétique*, Paris, 1758, p. 111, appears to confirm this interpretation: ' Diane est proprement la matière au blanc, couleur qui apparaît dans l'oeuvre avant la rouge appellée Apollon. Alors c'est Diane toute nue '.

[40] Jacob Tollius, in his *Fortuita In quibus, praeter Critica nonnulla, tota Fabularis Historia Greca, Phoenicia, Aegyptiaca, ad Chemiam pertinere asseritur*, Amsterdam, 1687, p. 46, likens the two opposing forces to Jupiter carried by his eagle and to three-headed Cerberus.

The well or Latona may, therefore, signify here the mortal and earthly materia or the chaotic water sanctified by a celestial and spiritual fire (Jupiter), the same idea which appears to be expressed by the winged serpent in the well, in Ripley's verses (see above, p. 10). This would confirm my previous conjecture about the meaning of Diana in this context, as she would thus become the perfected mercurial matter resulting from her parents' chemical marriage.

Consequently, the title *Aquila & Serpens* and the four mythological lines underneath would appear at least in so far connected, as both refer to the Philosopher's Mercury as the true matter, to its production and to its sublimation. The fighting serpent and eagle, the winged serpent or Latona's well and 'Diana sine veste', therefore, appear to denote three consecutive stages of Sublimation. But the eagle and serpent, as we have seen, also signify the whole and perfected alchemical process.

The symbolism of the references to classical mythology in strophe 5 of *The Magistery*,—Python, Cadmus and Iason,—is not so remote, and they all have the same meaning:

(*a*) Apollo killing Python or Typhon, the dragon, is explained by Michael Maier and by Raymond Lull as the Philosophers' Sol, vanquishing Nature or the Philosophers' Sulphur, represented by the four coruptible elements:

> 'Haec satis elucidare possunt, quis sit Apollo, nempe Sol noster, quis Draco, serpens et Python, nempe illa aqua foetida quae putrescit. Id clarissime Lullius Theor: Test. C. 10 testatur[41]: Et haec, inquit, ratione allegorice oportet dicere, quod magnus Draco de quatuor est Elementis, & non intellectu literali, quia sit terra, aër, aqua vel ignis, sed sola natura est & una quae continet in se naturam & proprietatem 4. Elementorum'.[42]

(*b*) Michael Maier[43] remarks that nearly all the fables about Cadmus's feats denote 'chymiae propria arcana'. Eirenaeus Philaletha refers to the hollow oak and Cadmus's companions ('his new rais'd army', as William Backhouse calls them), but he leaves it to his reader's wit to discover their alchemical meaning:

> 'Disce igitur qui sint socii Cadmi, quique sit Serpens, qui illos voravit, quae sit cava quercus, ad quem Cadmus Serpentem transfixit'[44].

The heading of the chapter points to the solution of this riddle. It is inscribed 'De Componentibus Principiis Mercurii Sophici'. Cadmus's army and the hollow oak, therefore, appear to be further references to the means, by which

[41] Testamentum Raymundi Lulli, in Manget's *Bibliotheca Chemica Curiosa*, Col. Allobr., 1702, vol. i, p. 714

[42] Michael Maier, *Arcana Arcanissina*, s.a., pp. 204, 205.

[43] Michael Maier, *Arcana Arcanissima*, s.a., p. 45.

[44] Eirenaeus Philaletha, *Introitus Apertus ad occlusum Regis Palatium*, in Manget's *Bibliotheca Chemica Curiosa*, Col. Allobr., 1702, vol. ii, p. 662. The first printed edition of this treatise appeared in 1667, but it had existed as a MS long before that date. *Cf.* Ferguson, *Bibl. Chem.*, Glasgow, 1906, ii, p. 192.

the dragon-slayer, *alias* the artist, forces the raw sulphurous matter of the elements, represented by the dragon, to yield its hidden mercurial principle. The hollow oak, to which the dragon is transfixed, probably means the vessel, in which the process takes place.

(*c*) Iason, the third dragon-slayer mentioned in *The Magistery*, whom Tollius [45] calls 'proximus Panaceae' and 'heros Chemicus', is identified with Cadmus by Maier [46]: 'Est autem Cadmus idem opifex, qui Iason, quod patet ex eiusdem generis serpente, eiusque dentibus seminatis, unde terrigenae armati prosilierint'. Pernety, in his *Les Fables Egyptiennes et Grecques Devoilées & réduites au même principe*, (Paris, 1758, vol. i, pp. 437 *sqq.*) devotes a whole chapter to the alchemical interpretation of Iason's expedition to Colchis. He explains the symbolism of the 'fiery steeres' which Iason yoked as follows (p. 467, *ibid.*):

> '. . . . ce n'est pas assez d'avoir tué le Dragon; des Taureaux se présentent aussi en vomissant du feu; il faut les dompter par le meme moyen, & les mettre sous le joug. J'ai assez expliqué dans le chapitre d'Apis ce qu'on doit entendre par les Taureaux; c'est à dire, la véritable matière primordiale de l'oeuvre; c'est avec ces animaux quil faut labourer le champ Philosophique, & y jeter la sémence qui y convient'.

Pernety seems to follow here almost literally Michael Maier, who, in his *Arcana Arcanissima* (s.a., p. 76) writes on the same subject:

> '. . . . ad Tauros domandos accessit Iason; Quid vero per Tauros intellegatur, iam ante sub Apidis Hieroglyphico, admonuimus: Hoc enim est verum subjectum Medicinae Aureae sine quo nihil fit . . .'

We may, therefore, conclude that the subjugation of Iason's 'fiery steeres' conveyed to William Backhouse the same alchemical meaning as to his contemporary Maier, and a hundred years later to Pernety, namely the preparation of the primary mercurial matter.

The next phase of the sublimatory process is described in the succeeding sixth and seventh strophes of *The Magistery*, dealing with eagle and serpent. Their explanation was anticipated (see pp. 6–11 of this paper), because, in connexion with the handwritten Latin poem on the same subject, appended by Ashmole, they permitted an easier access to the symbolical concept of the whole poem.

The eighth strophe describes the last stage of Sublimation, in which the mercurial matter, represented as the winged serpent or the young king, attains its ripeness by imbibing its 'owne blood', which means by absorbing the last residue of the crude sulphurous matter of the original unwinged dragon. This is frequently depicted by the old Gnostic symbol of the dragon eating its own tail and also by two dragons devouring each other. Maier's *Atalanta*

[45] Jacob Tollius, *Fortuita, In quibus, praeter Critica nonnulla, tota Fabularis Historia Greca, Phoenicia, Aegyptiaca ad Chemiam pertinere asseritur*, Amsterdam, 1687, p. 57 and Index.

[46] Michael Maier, *Septimana Philosophica*, Frankfurt, 1620, p. 63.

Fugiens, Oppenheim, 1618, p. 65, contains a beautiful engraving by de Bry of the winged dragon eating its tail. Maier (p. 66) explains the emblem as follows :

> ' . . . . et quod Draco caudam suam devoret, famem eius maximam denotantes (sc. philosophi). Quod licet alii exponant de anno in se redeunte & circulum referente, tamen primitus a Philosophis suis rebus accomodatum fuit, qui per hunc draconem intellegi volunt serpentem qui alium sui generis devoret, & hic vocatur proprie sulphur '.

Raymond Lull [47], whom Maier quotes later on, expresses himself on the subject in similar terms :

> ' Hoc est, inquit, sulphur, fili, & hic coluber & draco devorans caudam suam, Leo rugiens & gladius acutus, scindens omnia & confringens '.

The penultimate strophe of *The Magistery* refers to the strangest of all alchemical symbols. The matter, now duly freed of all sulphur, has to be decomposed again and must be regenerated in order to obtain its final strength. This process is often depicted as the death of the young king. He is either eaten by a wolf and then revived by fire consuming the wolf [48], or, as Osiris, dismembered by Typhon and then miraculously reassembled by his mother Isis [49], or eaten by his father, who afterwards dissolves into water and, at the same time, emits a new son, with whom he remains for ever united [50]. In William Backhouse's poem the king does not die, but he has to enter again ' in his Virgin-mothers womb ', in order to be re-born ' ten times stronger '. Mother and Virgin seem to denote an earthy substance, but may at the same time point to the *vas naturae*, which is often likened to *matrix* [51]. The allegory may have been influenced by Maier's commentary on a passage in the *Rosarium Philosophorum* [52], where the same stage of the alchemical process is described as a conjunction of Gabricus with his sister Beya :

> ' Nam Beya ascendit super Gabricum, & includit eum in suo utero, quod nihil penitus videri potest de eo. Tantoque amore amplexata est Gabricum, quod ipsum totum in sui naturam concepit, & in partes indivisibiles divisit '.

The effect of their conjunction is explained in a verse, a few lines further on :

> ' Per se solvuntur, per se quoque conficiuntur,
> Ut duo qui fuerant, unum quasi corpore fiant '.

Maier, commenting on this mystical conjunction of Gabricus and Beya, in the

[47] *Testamentum Raymundi Lullii*, in Manget's *Bibliotheca Chemica Curiosa*, Col. Allobr., 1702, vol. i, pp. 707 *sqq*.

[48] Michael Maier, *Atalanta Fugiens*, Oppenheim, 1618, p. 105.

[49] *Ibid.*, p. 185. The epigramme under the engraving stresses the absence of sulphur.

[50] Lambsprinck, *nobilis Germani Philosophi antiqui libellus de lapide Philosophico*, Frankfurt, 1625, pp. 30–35.

[51] *Cf. e.g.*, *In Turbam Philosophorum Exercitationes*, in *Artis Auriferae etc.*, Basle, 1593, vol. i, p. 157, and *Aurora Consurgens*, *ibid.*, vol. i, p. 203.

[52] *Rosarium Philosophorum*, *ibid.*, pp. 246, 247.

7th book of his *Symbola Aureae Mensae Duodecim Nationum* (Frankfurt, 1617, pp. 319 and 344) writes:

> ' Lapis habetur ex matrimonio Chabrici et Beiae '.

He also explains why this marriage of brother and sister or the similarly incestuous conjunction between mother and son, which both, he says, mean the same, have to take place:

> ' Si enim unus sit masculus & una femina, eius mater, in mundo, annon hi duo coniungendi sint, ut genus humanum inde multiplicetur ? Ratio id suadet, licet iam aliter sit in mundo tot hominibus repleto : eodem modo cum saltem in arte Chymica sint duo subjecta, quorum unum alterius mater est, haec copulanda veniunt, siquidem absque illis nulla generatio fiat : Hic est frater & illa soror, hic est maritus et illa uxor, hic est filius et illa mater '.

According to Maier, the symbol of the incestuous conjunction, therefore, means that the work can be brought to its perfection only by the inherent forces of the mercurial substance itself, and not by any extraneous means. The mercurial substance is always described as dual and as being of both sexes, and so it must have been tempting to compare its offspring to the child of an incestuous marriage between near relations.

As further possible sources of this theme in *The Magistery* I would like to mention:

(*a*) *The Worke of John Dastin* printed in Ashmole's *Theatrum Chemicum Britannicum* [53]. There too the king is re-born by his mother and then emerges as the perfected Stone. If the ascription of this poem to John Dastin is correct, the symbolism would be remarkably old, for John Dastin lived in the 13th and early 14th century.

(*b*) George Ripley's *Cantilena* [54] which, in William Backhouse's earlier years, existed already in various English and Latin MSS [55]. This entire poem is devoted to the mystical second birth of the king and to the praise of his mother who achieved it.

At the conclusion of this commentary on *The Magistery*, the reader may be reminded that the different phases of the work, explained here as consecutive developments, were not in actual fact supposed to mean consecutive stages, but different and possibly simultaneous aspects of only one operation. William Backhouse's translation of Synesius's *Le Vraye Livre de la Pierre Philosophale* (see p. 31 of this paper) in Ashm. MS 58 (pp. 76 verso *sqq.*) expresses this very clearly:

> ' . . . . and note that to disolue, to calsine, to teigne, to whiten, to renewe, to bathe, to wash, to coagulate, to imbibe, to decocte, to fixe, to grinde, to drie, & distill, are one & y^{e} same thinge and thay signifie nothinge else but that thou must decocte y natures till thay bee perfecte '.

(See also the quotation from the same book on p.p. 8–9 of this paper.)

[53] London, 1652, pp. 257 *sqq.* See especially p. 264, str. 30, and p. 266, str. 38.

[54] *Georgii Riplaei Canonici Angli Opera Chemica*, Cassellis, 1649, pp. 421–426.

[55] *Cf.* F. Sherwood Taylor, *George Ripley's Song*, Ambix, vol. 2, Nos. 3 and 4, Dec. 1946,

Period from 1634 *to* 1649.

The data of William Backhouse's life during the next fifteen years are scanty and do not make a coherent story.

Anthony à Wood informs us that, about 1636, William Backhouse acquired some ' imperfect papers " concerning the eternity, infinity, &c. of the world " and others " of the essence of God, &c." ', written by Nicholas Hill (1570 ?–1610), from his widow [56].

About 1637 or 1638, William Backhouse married Anne Richards, daughter of Brian Richards of Hartley Westfield, Hamps. Their first child Samuel died young (Ashm. MS 851, p. 20).

On November 6th, 1640, a second son was born and called John. His horoscope was cast by Ashmole, probably in later years (Ashm. MS 332, p. 48 verso).

In 1641, the third and last child of William Backhouse, a daughter, was born and called Flora (Flower). She became William Backhouse's sole heir and was the last of his line [57].

On December 28th, 1644, William Backhouse finished his translation of Jean de la Fontaine's alchemical poem *La Fontaine des Amoureux de Science*. (See p. 27 of this paper.)

On October 9th, 1649, Sir John Backhouse, William's eldest and only surviving brother, (see footnote 11), died, and William Backhouse, then 56 years old, succeeded him as owner of Swallowfield. (*Cf.* Rawlinson MS 73, p. 50.)

About the same time or soon after, Dr. William Lloyd, later Bishop of St. Asaph and successively of Lichfield, Coventry and Worcester, became tutor to the children of Willam Backhouse at Swallowfield [58].

[56] Wood, *Athenæ Oxonienses*, ed. Bliss, ii, 86.

[57] Flower Backhouse married three times: (*a*) in 1656, William Bishop of South Warnebourne, Hamps. The two children of this marriage died young (Ashm. MS 851, p. 20). William Bishop died on March 3rd, 1660, at Swallowfield. (*b*) in 1662, shortly after her father's death, Flower Backhouse married her cousin Sir William Backhouse, of London. He died in 1669, aged 25 or 28, and left no issue (Ashm. MSS 836, p. 347 and 851, p. 20). (*c*) In 1670, Lady Flower Backhouse married Henry Hyde, Viscount Cornbury (1638–1709), who, in 1674, at his father's death, became the 2nd Earl of Clarendon. There were no children of this marriage. In 1683, Flower, Countess Clarendon, became First Lady of the Bedchamber to Princess Anne. She died in 1700 and is buried at Swallowfield. Her letters are full of charm and elegant erudition. For further information concerning Flower Backhouse, see Lady Russell, *Swallowfield And Its Owners*, London, 1901, pp. 137 *sqq*.

[58] *Cf.* R. T. Gunther, *The Diary and Will of Elias Ashmole*, Oxford, 1927, p. 55. In 1656, William Lloyd accompanied his old pupil John Backhouse to Wadham and remained with him as his private tutor for three years. He remained a friend of the Backhouse family. In 1670, he consecreated the marriage of Lady Flower Backhouse to Viscount Cornbury (see footnote 57). William Backhouse left to him some land and a selection of his and his son John's books. *Cf.* Lady Russell, *Swallowfield And Its Owners*, London, 1901, pp. 128, 129, and E. G. Hardy, *Jesus College*, London, 1899, p. 143.

Elias Ashmole and William Backhouse, ca. 1650–1662.

We do not know when Ashmole met William Backhouse. The first entry in Ashmole's diary mentioning him [59] is dated '1651, Apr: 3. 0^h 30′ p.m.'. It runs:

> M[r] Will: Backhouse of Swallowfield in Com., Berks. caused me to call him Father thence forward. (Ashm. MS 1136, p. 24 verso.)

This seems to suggest that they had already known each other for some time [60]. In April 1651, Ashmole was 33 years old. In 1647 he had settled at Englefield, Berks., 'where for a time he lived very studiously' [61]. Englefield is only about ten miles from Swallowfield. Ashmole's interest in Astrology, which he had begun to study in 1644 [62], may have first induced him to seek his neighbour's acquaintance [63]. Two years later, Ashmole became lord of the manor at Bradfield near Theale, which is also in the immediate neighbourhood of Swallowfield. His interest in Chemistry and Alchemy seems to have originated about the same time [64].

Ashmole must have attributed the greatest importance to the event of his adoption. He noted the exact hour and minute, because he wanted to cast its horoscope [65], and he probably examined this in relation to William Backhouse's and his own nativity [66]. His joy and gratitude he expressed in a dithyrambic ode, which is preserved in Ashm. MS 36, pp. 241 verso and 242. This ode has been printed by R. T. Gunther, *The Diary and Will of Elias Ashmole*, Oxford, 1927, p. 43–44, but with some inaccuracies:

[59] This and the following quotations from Ashmole's diary are taken from the original in Ashm. MS 1136, as none of the printed texts were found to be quite accurate.

[60] The earliest occurrence of a member of the Backhouse family in Ashmole's diary is dated '1651, Feb. 1', when Ashmole bought from Mrs. Backhouse of London 'her deceased husbands Bookes'. The deceased was probably William Backhouse's first cousin Nicholas Backhouse of London, who died in 1650 (*cf.* Ashm. MS 851, p. 20).

[61] Wood, *Athenæ Oxonienses*, ed. Bliss, iv, 355.

[62] *Cf.* Ashm. MS 1136, p. 177.

[63] Anthony à Wood (*Athenæ Oxonienses*, ed. Bliss, iii 576) calls William Backhouse 'a great encourager of those that studied chymistry and astrology, especially of Elias Ashmole'.

[64] *Cf.* Anthony à Wood, *Athenæ Oxonienses*, ed. Bliss, iii, 576. In 1650, Ashmole edited his *Fasciculus Chemicus* which contains two alchemical tracts translated by him, under the anagram of James Hasolle. On May 20, 1650, he asked the stars, (*cf.* footnote 75*a*): "Whether I shall ever have the Philosophers' Stone, or whether the matter and fire I think of be true". (Cipher note in MS Ashm. 374, *f.* 37[v]).

[65] *Cf.* lines 25 *sqq.* of the ode which follows. The horoscope is preserved in MS Ashm. 374, *f.* 104[v]. Its cipher-inscription reads as follows: ♃ 3, Apr: 1651. 0.31.' P: M: The time when Mr. Backus made me his son / ☽ ☌ ✶ ☿ ad △ ♂".

[66] William Backhouse's nativity cast by Ashmole is contained in Ashm. MS 332, p. 12 verso, Ashmole's own nativity in Ashm. MS 1136, pp. 177 and 219. It must have struck both friends as most significant that, by the rules of Astrology, their horoscopes show a very marked relationship.

' To my worthily honour'd
William Backhouse Esqr
Upon his adopting of me to be his Son.

From this blest Minute I'le begin to date
My Yeares & Happines ; (since y^u^ create
What wise Philosophers call Lyfe ;) & vow
I ne're perceived what Being was till now.

See how the power of y^r^ Adoption can
Transmute imperfect Nature to be Man :
Nay, with one Word may yet refine it more,
Then all y^e^ best digested Indian Oare.

Yo^r^ Son ! ' Tis soe ! for I begin to finde,
Your Auncestors large Thoughts grow in my minde:
I feele y^t^ noble Blood spring in my Heart,
Which does intytle me to some small parte
Of grand sire Hermes wealth ; & hope to have
Interest in all the Legacies he gave,
To his successive children ; from whoome too
I must derive what is confer'd by you.

To prove each mie descent, I neede not see,
A byast Herald for my Pedigree ;
That I'me true bred, question it he y^t^ dare,
If these my Aeglite Eyes on th' Sun can stare.
Or cause a ☿ in Crest I hold[67]
Since my crude Mercury's transmute to Gold.
I'll vouch my Fate for Honor, Witt, descent,
And all, w^ch^ to th' Hermetic Tribe is lent.
Then be you blest my Starrs, who gave to me
So blest a tyme for this Nativity,
That plac'd the golden Lyon [68] in the East [69]
When Sol within the Ram [70], the Nynth [71] possest,
As if their Influence meant to ope the way,
To make Night misteries shine cleere as day.

[67] Ashmole's crest was the God Mercury proper. His motto 'Ex uno omnia' alludes to Mercury in its alchemical sense.

[68] The zodiacal sign of the Lion was considered as propitious for the position of the Sun. The sun, in Alchemy, is a synonym for gold.

[69] The ascendant.

[70] The first month of Spring, when the sun is in the ram, was regarded as the most favourable time of the year to start the alchemical work. *Cf. e.g.* Ashm. MS 1445, v, 1, and *Bloomefields Blossoms : or The Campe of Philosophy* in *Theatrum Chemicum Britannicum*, pp. 305 *sqq.*, beginning : ' When Phoebus was entred the signe of the Ramme ', also Ripley's *The Mystery of Alchymists*, *ibid.*, p. 380.

[71] The ninth house of the horoscope was supposed to be related to Philosophy and Religion.

Hast yee some good direcon [72] y^t^ shall lead
My Fathers hand w^th^ 's Blessing to my Head
And leave it there. His leaves of Hermes Tree
to deck the naked Ash bequeath to me ;
His Legacy of Eyes to 'th blinde Mole spare
And (though a younger Son) [73] make me his Heire '.

{ 13 May 1653, 11^hours^ : before noon.

Ashmole's ode proves that the adoption was intended to link him with a supposedly long chain of alchemical ancestry, who, from Hermes onwards, transmitted their secrets only by oral tradition to their spiritual sons, *i.e.* each to one carefully selected disciple. The theory of Hermetic adoption is discussed by Ashmole, *Theatrum Chemicum Britannicum*, London, 1652, pp. 440, 441 ; also by John Heydon, *The idea of the law*, London 1660, and in *Themis Aurea, The laws of the Fraternity of the Rosie Crosse. Written in Latin by Count Michael Maierus*, London, 1656, p. 104–111. This latter book was possibly translated by Thomas Vaughan. It is dedicated to Elias Ashmole, ' The onely Philosopher in the present age '.

Lines 1–16 make it likely that William Backhouse, on the occasion of Ashmole's adoption, explained to him some of the veiled symbolisms of Alchemy ' to make Night misteries shine cleere as day ', but the last six lines seem to intimate that Ashmole desired further instruction. This is confirmed by the later entries in Ashmole's diary (see p. 20 of this paper) and also by the fact that Ashmole noted on the margin against line 32 the date, hour and minute, at which the ' direction ' he had hoped for materialised.

A note in Ashmole's secret shorthand [73a], which is preserved in MS Rawl. 864 D f. 207^r^, gives us some idea of the subjects of his first alchemical conversations with his father Backhouse. The words ' Father Backhouse ' written on the margin against the beginning of these notes and also the repeated reference to a person Ashmole simply calls ' he ' in their latter part make it certain that these informations actually came from Father Backhouse, especially as there is no other person mentioned in the context to whom the word ' he ' could have reference. A note on the lower part of the margin which deals with a different subject is dated ' 25: Apr: 1651 '. As it was obviously written later than the main text, we may infer that the alchemical conversations in question took place before April 25, 1651. The cipher notes read as follows :

' Father Bachus — Lord Dacre wrought upon the sluch of stars [*i.e.* star-slough or nostoc] / This is not the falling of stars, but the sperm of sheep which fall from them / Some have wrought much upon Sutt / Vaughan upon the spirit of saltpeter / and of late he added May-dew to it. /

[72] Astrological directions concern the calculation of a date, at which an event indicated in a horoscope shall actually take place.

[73] Probably an allusion to John, William Backhouse's son.

[73a] Ashmole's cipher has been solved by the author in the course of preparation of this paper. These extracts from Ashmole's secret notes are the first that have been published,

Rub a picture with an onion cut in the middle and it will recover it / or else take the ashes of the Univ. Mj (?) copperos and burnt Alom half a walnut / conduit water a pint / put the water on the fire and to it a little soape / and rub on the lees as hot as you can on the picture. /

Ramund Lully was kept prisoner in England by E[dward] III, and he made himself a wapour (*sic*) to get out / and when he was gone he wrote the verses of the bird caught in a cage and let go / to E[dward] III. /

The damp of the air may thus be taken / make 3 holes or voyd places in a mine, place a fire in one of them and lay the mouth of a glass toward it / and make a fire likewise in the next voyd place / and it will beat the damp out of the wall between, and then provide to stop the glass some way without coming into the mine/ and the glass thus stopped set in the philosophers' fire/ Damp is not so powerful and deadly in winter as in summer/ In coal-mines when the damp is in the pit/ they use to throw down a truss of straw-kindled fire and it presently dries the damp out. /

He hath seen the sp[irit] of saltpeter do strange things / both for colours etc: sutt of the sayings of the philosophers. / Also he hath seen the salt of sea-water brought to a state that was fusible and would melt / but he sayeth it is a question whether the sea's be salt natural or accidental.

He hath used a lamp furnace to try many experiments / as to hatch eggs / The saltpeter he gathered in a vault, he put it into a glass sealed up and it (from a powder) dissolved into water. /

There is a little shell-fish in Lincolnshire which cleave to the sides of stones / break them off and you shall find a little white substance cleave to the stone / This is supposed to be something of note. /

He wondered that after so many experiments no man yet hath attempted upon Barme '.

The next two entries in Ashmole's diary also concern William Backhouse :

' 1651, Apr: 26. 5^{h} 30′ p.m. my Father Backhouse brought me acquainted wth the Lord Ruthin [74] who was a most ingenious person '.

[74] According to Lady Russell, *Swallowfield And Its Owners*, London, 1901, p. 125, this person was Sir Thomas Ruthven of Freeland, N.B., who, in 1651, was created a baron by Charles II and was a great chemist. R. T. Gunther, in his edition of *The Diary And Will Of Elias Ashmole*, Oxford, 1927, repeats Lady Russell's information, the source of which I have not been able to trace.

'1651, June 10. Mr. Backhouse told me I must now needes be his son, because he had communicated so many secrets to me'. (Ashm. MS 1136, p. 24 verso).

About a month later, Ashmole sent his *Theatrum Chemicum Britannicum* to the printers (see Ashm. MS 1136, p. 25). It seems almost certain that William Backhouse advised and helped him in obtaining and selecting the alchemical MSS, from which this work was printed. In fact, the Ashmolean MSS contain many traces of a continual exchange of alchemical books, MSS and information between the two friends (see pp. 21–24 of this paper.)

The next entry in Ashmole's diary referring to William Backhouse concerns a different subject:

'1651, Oct. 9. My Father Bachus & I went to see M^{r} Goodier (the great Botanist) [75] at Petersfield'. (Ashm. MS 1136, p. 25.)[75a]

Five months later we hear again of alchemical conversations:

'1652, Mar. 10. This morning my father Backhouse opened himselfe very freely, touch^{g} the great secret'. (Ashm. MS 1136, p. 27.)

And a month later:

'1652, Ap. 12. This morning I rec^{d} more satisfac̃cion from my Father Backhouse, to the Questions I proposed'. (Ashm. MS 1136, p. 27.)

But this apparently hesitating and gradual disclosure of the secrets of Alchemy reached its climax only after one more year, when Ashmole noted in his diary:

[75] John Goodyer (1592–1664), the well-known Hampshire botanist: see R. T. Gunther, *Early British Botanists and their Gardens*, Oxford, 1922, p. 82.—*The Diary of John Evelyn* London, 1879, vol. iii, pp. 5, 6, describes the exquisite beauty of park and gardens at Swallowfield, in 1685. They may have been planted by William Backhouse. Ashmole too, was a keen botanist (*cf.* Wood, *Athenæ Oxonienses*, ed. Bliss, iv, 359.)

[75a] Since this paper went to the printers, two notes in cipher, written by Ashmole, have been found which concern this stage of his relations with Father Backhouse. They are both written inside astrological schemes, which proves that Ashmole tried to gauge the exact significance of the respective events by astrological interpretation.

The first one is a so-called *election, i.e.* a question the answer to which was supposed to be found in the position of the planets during certain constellations, especially of the moon, that were related to the subject-matter of the question. It reads: "♃ 13. Nov. 1651 11 [o'clock] A:M: Whether what was told me the 11[th] of Nov. at night setting, discoursing in my work-house, be the true matter / Father Backus / ☽ â △ ☉ ad △ ♃" (MS Ashm. 374, *f.*128v) This entry proves that Ashmole had a laboratory and that he was visited there by William Backhouse.

The other cipher-note recently found indicates the reaching of a further stage of intimacy:

"1. Jan: 1652. 4.30′ P: M: The first time I came to Swallowfield House." (MS Ashm. 374, *f.* 133v).

William Backhouse must have been an extremely cautious man, for it was only nine months after the event of Ashmole's adoption that Ashmole was first admitted to his Father Backhouse's home,

'1653, May. 13[76]. My father Backhouse lying sick in Fleetestreete over agt: St Dunstans Church, & not knowing whether he should live or dye, about eleven o clock, told me in Silables the true Matter of the Philosophers Stone: wch he bequeathed to me as a Legacy'. (Ashm. MS 1136, p. 29.)

Only the prospect of death approaching appears to have induced William Backhouse to impart the most important secret of his alchemical knowledge to his younger friend. We do not know for certain, if this secret had been left also to William Backhouse by a spiritual father or if he claimed to have found it by himself. Ashmole's ode (line 10) at any rate alludes to William Backhouse's hermetic ancestry. Nor is there any trace of a disciple, to whom Ashmole, in turn, might have handed on this invaluable information, unless possibly he communicated it to Robert Plot (see *Ambix*, this number, p. 75).

William Backhouse recovered from his serious illness [77]. We may assume that, during the last nine years of his life which followed, his friendship with Ashmole and their frequent exchange of information mainly concerning Alchemy continued undiminished. All entries in Ashmole's MSS concerning such information or referring to William Backhouse's library are undated. I shall insert them here together, because a number of these short notes are in Ashmole's interleaved copy of his *Theatrum Chemicum Britannicum* (Ashm. MSS 971, 972) and must, therefore, have been written by him after the publication of this book in 1652.

(*a*) The Prolegomena of the *Theatrum Chemicum Britannicum*, dated at the end '26. Jan. 165½', relate 'the Vegetable Stone' to the precocious blossoming and unseasonable verdure of certain trees at Christmas, such as 'the Oake in New-Forest in Hampshire that bore greene Leaves at the same Season'. On one of the fly-leaves of Ashm. MS 971 (p. 3 verso) Ashmole has noted in handwriting:

'Concerning the Oake in New Forrest mencõned in my Prolegomena, I had first notice of it from Wm Backhouse of Swallowfield in Com. Berks Esqr: & after had it confirmed by Anthony Blagrave of Bulmarsh in eod: Com. Esqr: who had land neere it, & had often seene it.'

(*b*) Ashm. MS 833, pp. 443, 444, contains certain transcripts and extracts of ancient charters with seals. A note in Ashmole's hand explains that they were 'Collected from old deedes in my father Backhouse hands. 7. Sept: 1657'.

(*c*) In Ashm. MS 1445, VIII, p. 52 verso, at the end of a fragment of an

[76] *Cf.* Ashmole's note of this date and of the hour against line 32 of his ode (p. 18 of this paper).

[77] There is a curious report of another illness of William Backhouse in John Aubrey's *Miscellanies*, London, 1696, p. 100. He cured himself of 'an ugly Scab that grew on the middle of his Forehead' by means of dew-drops.—Aubrey (*ibid.*) also informs us that it was William Backhouse's custom 'once every Summer to Travel to see Cathedrals, Abbeys, Castles &c'. Aubrey (*ibid.*) calls him 'a Learned Gentleman, a Chimist, and Antiquary'.

alchemical poem beginning ' In Arsenicke sublimed there is a way straight ', Ashmole has noted :

> ' Then in Mr Bachus Booke followes Of Spaine take ye cleere light. &c: '

(*d*) Ashm. MS 1456, an alchemical treatise entitled *De Sapientia Veterum sive Doctrina eorundem de summa et universali medicina*, contains, on the first leaf, a list of the manuscript's chapters and their pages in ' Mr. Bachus Booke '. This list was written with a pencil by Ashmole. It seems to suggest that William Backhouse and Ashmole exchanged correspondence regarding this text, of which both had a manuscript copy with differing paginations. W. H. Black, in his Catalogue of the Ashmolean MSS, ascribes Ashmole's copy to the time of James or Charles I [78].

(*e*) On p. 4 of the interleaves of Ashmole's copy of his *Theatrum Chemicum Britannicum* (Ashm. MS 971), there is a note in Ashmole's hand concerning another text in William Backhouse's library which Ashmole seems to have collated with his own copy of Ripley's *Medulla Warchadumiae* :

> ' Mr. Jo: Higins vic: of Win: translated Riplyes Medulla out of Latin into English wch much differs from yt translacõn wch my father Backhouse hath '.

Higins's translation is preserved in Ashm. MS 1507, pp. 109 v.–120. Another translation of the same work, which could be the one formerly in William Backhouse's library, is contained in Ashm. MS 1487, pp. 172–180. W. H. Black's *Catalogue of the Ashmolean MSS*, col. 1409, mentions Edward Barlowe as the probable author of this latter translation.

(*f*) Another note, written by Ashmole on the interleaf against p. 458 of his *Theatrum Chemicum Britannicum* (Ashm. MS 972), also concerns George Ripley. It explains that ' Will: Backhouse of Swallowfield in Com. Berks Esqr ' was the acquaintance, of whom the printed text says :

> ' An acquaintance of mine hath in his custody certaine private observations of an English Gentleman of good quality and credit, who in his Travels abroade, Observes (among other things) that in the Isle of Malta he saw a Record, which declares that this Sir George Ripley gave yearly to these Knights of Rhodes 100,000 *l.* towards maintaining the war (then on foot) against the Turks.'

I have not been able to find any MS or printed work of William Backhouse's time to which Ashmole's description would apply.

(*g*) On the first leaf of a MS entitled *A recitall of the Celestiall apparitions of this present Trigon now in being* in Ashm. MS 242, p. 60, is the following note :

> ' I suppose this to be the worke of Mr. Denham he lived in Distiffelane he followed the Erle of Comberland : he left Mr. Jones his Executor.'

[78] The unedited text of this MS has no connexion with Francis Bacon's *De Sapientia Veterum*. The figures accompanying it were partly copied in J. C. Barchusen's *Elementa Chemiae quibus subjuncta est Confectura Lapidis Philosophici Imaginibus Repraesentata*, Leyden, 1708, unless the figures in both are derived from a common earlier source.

Underneath is a note in Ashmole's hand :

> 'This is the handwriting of William Backhouse of Swallowfield in Com. Berks Esq^r. But I have since met w^th this treatise written in Quarto in a small hand, and about the latter end of King Jame's reigne, w^ch saies S^r Christopher Heydon was the Author : . . . .

We may infer from these two notes that this astrological MS had been at one time in William Backhouse's possession and was later acquired by Ashmole. (Concerning William Backhouse's handwriting, see pp. 27–28 of this paper.)

(*h*) Anthony à Wood [79] informs us that William Backhouse aided Ashmole in the publication of *The Way To Bliss* (London, 1658) by providing him with an unmutilated manuscript copy of the original :

> Mr. Ashmole also did publish a learned treatise of the philosopher's stone, entit. The Way to Bliss, in three Books, Lond. 1658. qu. pen'd by an unknown author living in the reign of qu. Elizabeth. He had received the copy from his father Will. Backhouse who was the owner of it, purposely to do right to the author thereof, because they both had met with a pretended copy of the said Way to Bliss, ready fitted for the press: Which, upon perusal Mr. Ashmole found mutilated with many imperfections, much injured by several incongruous additions made up of some scatter'd shreds and fragments collected from the whole work : and besides intended that the world should take it for the child of one Eugenius Theodidactus (that is, Joh. Heydon who had then lately married the widow of Nich. Culpeper the astrologer) being (by rebaptization) called the Wiseman's Crown or Rosy-crucian Physick : under which title, notice was given of its coming abroad by another book, I mean Jo. Gadbury's almanack for the year 1658.

Most of these facts are also mentioned in Ashmole's preface to *The Way To Bliss* or confirmed by his handwritten annotations in his interleaved copy of the book (Ashm. MS 537). But he does not associate William Backhouse with the MS from which the book was printed. It is, nevertheless, possible that Anthony à Wood had received some information of this kind from Ashmole himself. In fact, Ashm. MS 760 which, but for the missing title, is a perfect copy of the text, is written in the same characteristic hand as several other Ashmolean MSS connected with William Backhouse [80], and Ashmole's remark at the end of the printed book's preface ' My copy was a transcript of the original ' may refer to this MS. But it is, nevertheless, certain that the printed book was eventually not based on this copy, even if this should have been William Backhouse's and Ashmole's original intention, for Ashm. MS 760 does not contain the extensive marginal notes of the printed book which, as Ashmole mentions in the preface, were written by Dr. John Everard [81],

[79] Wood, *Athenæ Oxonienses*, ed. Bliss, iv, 361.

[80] See pp. 27–28 of this paper.

[81] John Everard, D.D. (1575 ?–1650 ?). About him see D.N.B., vol. vi, p. 948. He published translations of Hermes's *Pymander* (1650) and *Asclepius* (1657). See also Ashm. MS 1440, pp. 196 & 200, containing his gloss upon the Smaragdine Table and a translation of alchemical aphorisms attributed to Basilius Valentinus.

'they being added to a Transcript of this book and both fairly written with the Doctors hand'. This transcript, written and annotated by John Everard, Ashmole goes on to explain, he obtained 'from a very intimate friend (one extraordinary learned and a great Ornament to our Nation)'. This is, in fact, such a description of William Backhouse, as Ashmole would be expected to write, if he did not want to mention his name. Many bibliographers, including Wood, have, therefore, assumed that it was William Backhouse who provided the copy annotated by John Everard, from which *The Way To Bliss* was printed. But, in his interleaved copy of the printed book (Ashm. MS 537), Ashmole has noted in handwriting on the margin that the 'intimate friend' to whom he was indebted for this annotated copy was 'Tho. Henshaw Esq^{r}:'[82]— All this, however, does in no way exclude the possibility, that William Backhouse took an active part in the publication of *The Way To Bliss*, as Anthony à Wood suggests, and that Ashm. MS 760 either came from William Backhouse's library at Swallowfield or was copied from a text at Swallowfield. The latter seems to be confirmed by a remark of John Aubrey (MS Aubrey 8, f. 4^{v}):

> 'From Elias Ashmole esq^{re}, scilicet that he had the booke called *The way to blisse* from his adoptive father Backhouse at Swallowfield in com. Berks. a MS. writ in queen Elizabeth's time, hand and style *ἀνονυμῶς*.'

An 18th century German bibliography of Rosicrucian literature in *Journal von und fuer Deutschland* (1785, pp. 274, 275) declares William Backhouse to be the author of *The Way to Bliss*. Kloss, *Bibliographie der Freimaurerei*, Frankfurt, 1844, No. 2620b and A. Wolfstieg ,*Bibliographie der Freimaurerischen Literatur* (Leipzig, 1923, vol. ii, p. 953) copied this assumption and treated it as an established fact, but there is no evidence, circumstantial or direct, to corroborate this theory. In fact, Ashmole's remark in the preface of the printed book, that the work 'seems to be written about the beginning of the last (or the end of the former) Century',[83] deprives it of all probability.

In 1653, the astrologer George Wharton (1617–1681) who was a friend of Ashmole dedicated his *Hemeroscopeion*, a yearly astrological almanack 'to the learned and right noble gentleman William Backhouse, Esq.' In his dedicatory epistle Wharton expresses his gratitude for 'the Noble Favours' he had received from his patron William Backhouse. And he continues: 'Sir, I need not persuade you of the Lawfulnesse, Truth, or Usefulnesse of this

[82] Probably a relation of Lady Flower Backhouse, née Henshaw, the wife of Sir John Backhouse, William's eldest brother. She died in 1651 (Ashm. MS 1136, p. 25 verso). In her will two Thomas Henshaws, the elder (whom she calls 'my nephew') and the younger, are mentioned. *Cf.* Lady Russell, *Swallowfield And Its Owners*, London, 1901, p. 123. About Thomas Henshaw see Wood, *Athenæ Oxonienses*, ed. Bliss, iv, 444, and D.N.B., vol. ix, p. 585.

[83] Ashmole dates the book too early, unless he calls his own century 'the last'. The many references in it to Paracelsus make it unlikely that it was written before 1570, when Paracelsus's main works began to appear in printed editions.

PLATE II.

Fig. 3.—Coat of arms of William Backhouse, from William Dugdale's *History of St. Pauls Cathedral in London*, 1658, p. 114.

Fig. 4.—Elias Ashmole, *Theatrum Chemicum Britannicum*, London, 1652, title page.

Science : you are known to bee a Great Master therein your selfe, and can determine whence the Mutations, Inclinations and Eversions of Empires and Kingdomes proceede '.—George Wharton had met Ashmole at Oxford, in 1645 ; they remained close friends ever after. Wharton seems to have been Ashmole's first tutor in astrology and perhaps he also acquainted him with alchemy (Dictionary of National Biography, i, p. 644). As Wharton apparently enjoyed William Backhouse's confidence, we may perhaps infer that questions related to the secret sciences were sometimes discussed between the three of them. At any rate, Wharton's dedicatory letter proves that William Backhouse was himself an astrologer of repute.

In William Dugdale's *The History of St. Pauls Cathedral in London*, (London, 1658, p. 114), William Backhouse is commemorated as a benefactor of St. Paul's by an inscription [84] and his coat of arms [85], on a ground-plan of St. Faith's Chapel engraved by Hollar. (See Pl. II., fig. 3.) We may presume that this was somehow arranged in agreement with Ashmole, who was William Dugdale's friend and, in 1668, also became his son-in-law, and who is himself commemorated as a benefactor on p. 169 of the same book. This reproduction of William Backhouse's coat of arms is of particular interest, because the accompanying French motto has a distinctly alchemical flavour. It runs *Scache Cache*, which in modern French would be ' sache cacher ' or ' sachez cacher '. The spelling of the motto as reproduced in Dugdale's book was no longer used in 17th century French. One may therefore conclude that William Backhouse had found it in some earlier document, unless, of course, the motto was inherited. But the latter alternative is unlikely. Mottoes are not strictly heraldic and were, in fact, often adopted by the individual bearers themselves. Moreover, the unusual advice ' Know how to conceal ' would not have befitted William Backhouse's merchant-minded forbears. It is, however, not excluded that some ancestor of William Backhouse was alchemically minded, and that might account for his motto as well as for his inherited crest [85a]. The motto occurs also in two alchemical MSS translated by William Backhouse [86] (see pp. 27, 31 of this paper), which proves that he himself interpreted it alchemically.

The motto recalls the fact that William Backhouse, unlike his father and brother, never held any public office, and that he never published anything under his name. It also seems that he had expressly asked Ashmole never to mention his name in any printed work, as Ashmole openly refers to him only in his manuscripts and in handwritten marginal notes in his printed books. William

[84] ' Ne labantis Ecclesiae Vestigia dispereant P. Guil. Backhouse Arm : Fundamentum aliud nemo potest ponere '.

[85] Quarterly : 1 and 4, per saltire gold and azure a saltire ermine (Backhouse) ; 2 and 3, gules, two cheverons between three escallops silver (Perkins) ; a crescent for difference.—The crest is the same as Nicholas Backhouse's (see footnote 5).

[85a] See note 101.

[86] Ashm. MS 58, on the fly-leaf against p. 1, and p. 88 verso.

Backhouse, in fact, appears to have been a man of retiring nature who wanted to avoid being too well known. It is, therefore, not unlikely that Ashmole had his father Backhouse in mind, when he gave the following description of an alchemist who has found the secret of the stone, in the *Prolegomena* of his *Fasciculus Chemicus* (London, 1650):

> 'For on whomsoever God out of his especial grace, is pleased to bestow this Blessing, he first fits them for a most vertuous life, to make them the more capable and worthy of it; and being so qualified, they straightway lay aside ambitious thoughts, and take up a retiredness; they dwell within their Root, and never care for flourishing upon the Stage of the World: The consideration of this Magistery being theirs, does more fill their Mindes, then all the Treasures of the Indies, were they entailed upon them, (it being not to be valued, because it is the summity and perfection of all Terrestrial Sciences;) nor indeed need such regard the airy and empty glory of Magnifying Fame, that can command an absolute Content in all things. Nay, some lose their vain glory so far, as none shall scarce ever hear them mention it; counting nothing more advantageous, then to conceal what they enjoy. For, as it is a Secret, of the highest nature and concernment; so God will not suffer it to be revealed to any, but those that can tell how to conceal a Secret.'

It must have been a severe shock to William Backhouse when, in 1660 [87], his only son, John, died at the age of twenty and without issue, only six months after the death of William Bishop, his son-in-law, whose only two children had both died in 1659 [88].

William Backhouse made his will soon after these events [89]. In 1661, he made over by Indenture to Jesus College some lands and farms for the maintenance of two fellows [90].

In the following year the last two entries mentioning William Backhouse were written in Ashmole's diary:

> 1662, May 30. May father Bachus died this Evening at Swallowfield. (Ashm. MS 1136, p. 37.)

> 1662, June 17. . . . . This afternoone my Father Backhouse was buried in Swallowfield Church. (Ashm. MS 1136, p. 37 verso.)

The monument of the Backhouse family in Swallowfield church describes William Backhouse's end as follows:

> ' Post tot clades, vir optimus moerore et lenta febre confectus vivendo lassus, missionem efflagitavit et obtinuit prid. Kal; Iun. MDCLXII '.

[87] *Cf.* Ashm. MS 332, p. 48 verso, the nativity of John Backhouse cast by Ashmole. It is likely that his father and Ashmole had often discussed his chances in life. Ashmole noted the date of his death on the same page as his nativity.

[88] See footnote 57 and family monument in Swallowfield church.

[89] Lady Russell, *Swallowfield And Its Owners*, London, 1901, pp. 129 *sqq*.

[90] *Jesus College*, by E. G. Hardy, London, 1899, p. 80. Copies of the original deeds are preserved in the Bursary of Jesus College.

He had fulfilled his task and wished to leave a world that had nothing more to offer to him [91].

William Backhouse's translations of French alchemical texts.

The following translations by William Backhouse are contained in the Ashmolean MSS:

(*a*) *The pleasant Founteine of Knowledge, First written in French Año* 1413, *by John de la Fonteine of Valencia in Henault, & translated* 1644. To this, the title of the first alchemical poem in Ashm. MS 58 (pp. 1–23), Ashmole has added in his well-known and unmistakable hand ' by W^{m} Backhouse of Swallowfield in Com: Berks Esq^{r}:'.—On the fly-leaf, opposite the title, is William Backhouse's motto ' Scache Cache '.

The poem consists of 1070 lines and an appendix of four lines. It begins ' When as y^{t} merry moneth of May '. The last two of the appended four lines are quoted in footnote 30.

At the end of the text the translation is again dated: ' 1644. December 28 ', and underneath are the words ' Laus Deo '[92].

The question, as to who was the writer of the text of this MS, also involves several other Ashmolean MSS connected with William Backhouse. It will, therefore, be discussed here with regard to all of them. According to W. H. Black's Catalogue of the Ashmolean MSS (Oxford 1845, col. 94) the text was ' written by Ashmole when young '. The same handwriting recurs in several other MSS connected with William Backhouse:

Ashm. MS 58, p. 27, (The Complaint of Nature);
Ashm. MS 58, p. 50, (The Alchimists Answere to Nature); probably
Ashm. MS 58, p. 82, (Synesius's Treatise of the Philosophers' Stone);
Ashm. MS 760 (The Way to Bliss);
Ashm. MS 1395 (Trismosin, The Golden Fleece);
Ashm. MS 1415 (see Footnote 92).

Besides the first three MSS in Ashm. MS 58, Black also ascribes Ashm. MSS 760 and 1395 to Ashmole's hand, although they all differ considerably from his

[91] For the sake of completeness I would like to add here that, according to Anthony à Wood, *Athenæ Oxonienses*, ed. Bliss, iii, 577, William Backhouse was ' the inventor of the Way wiser, in the time of George Villiers the first duke of Bucks '. Descriptions of this instrument for measuring distances when driving in a coach are given in the *Diary and Correspondence of John Evelyn*, London, 1906, vol. ii, p. 92, and in *The Post Boy*, June 19th to 22nd, 1697. The invention, I understand, is already mentioned in Vitruvius. But William Backhouse may have improved it, or he may have based it on a different mechanical device.

[92] The same formula *Laus Deo* is also at the end of 3 pages of alchemical verses in Ashm. MS 1415, VIII, p. 28, which are written by the same hand. Black adds here: ' written either by Ashmole or by Backhouse ' (Black's Catalogue, col. 1216).

usual handwriting. But when describing Ashm. MS 1445, VI, which also in Black's opinion is partly written by the same hand as the other MSS mentioned here, he becomes doubtful and says the several tracts contained in this article were *'written partly by the hand which resembles Ashmole's, but was probably that of his Father Backhouse (compare No. 58, No. 1415, etc.)'*. In my opinion it is unlikely that the handwriting in question was Ashmole's, because several of the texts written in this hand (Ashm. MSS 58, 760, 1395, 1445, VI) show additions and annotations in Ashmole's well-known hand along with the unknown writer's. Moreover, none of the MSS undoubtedly written by Ashmole as a young man confirms Black's first conjecture, with regard to Ashm. MS 58, that the unknown hand was that of Ashmole when young. They are all written in his familiar style.

Does the unknown hand, therefore, belong to William Backhouse, as Black suggests ?—The only unquestionably authentic specimen of William Backhouse's handwriting now extant, which is in Ashm. MS 242, p. 60 (see pp. 22, 23 of this paper), neither excludes this possibility entirely nor yet confirms it. These three lines attested by Ashmole as written by William Backhouse are written very faintly and do not allow of any reasonably certain judgment.

The likeliest assumption is, in my opinion, that the unknown hand belonged to a copyist, whom Ashmole or William Backhouse employed for MSS from Swallowfield library. In fact Ashmole's note on the fly-leaf of Ashm. 1395,

> 'This Booke was translated out of French by Will: Backhouse of Swallowfield in Com. Berks Esq^{r}: *& coppied from his Booke.*'

makes it easier to assume this than to suppose that William Backhouse himself wrote the text of his own translation a second time. Furthermore, if he had done so, Ashmole would, in all probability, have noted the fact.

But to return to the text which was the starting point of this digression,—its French original is Jean de la Fontaine's *La Fontaine des Amoureux de Science*. Its author is described as a native of Valenciennes in the early 15th century [93]. Lenglet Dufresnoy quotes an early undated edition of the poem, one of 1547 (Lyons), and one of 1561 (Paris). Ferguson [94] mentions another edition of 1618 (Lyons), by Pierre Rigaud, as the first poem in a collection entitled *La Metallique Transformation. Contenant trois anciens traictez en rithmes François*. In 1735, the poem was reprinted as an appendix to Guilleaume de Lorris's and Jean de Meun's *Le Roman de la Rose* (Amsterdam, 1735, vol. iii). The following quotation is taken from this edition (pp. 292, 293, lines 1021 *sqq.*) The English text is William Backhouse's translation (Ashm. MS 58, pp. 22 *sqq.*, lines 1021 *sqq.*) and is printed here as another example of his style :

[93] Lenglet Dufresnoy, *Histoire de la Philosophie Hermetique*, Paris, 1742, vol. i, p. 193.
[94] Ferguson, *Bibliotheca Chemica*, Glasgow, 1906, vol. i, p. 433.

Separe la terre du feu	The Earth from y^e^ fire thou shalt parte
Par engin & en propre lieu	By discrecon & with Art
Et doucement le gros despart	The subtill from y^e^ grosse depart
Du subtil, que tiendra à part.	Wittily keeping them aparte
Lors montera de terre ès Cieux,	Upto heaven it doth ascend
Et descendra devant tes yeux,	And downe to earth againe doth bend
Recevant vertue souveraine	Takes vertue of superiour
Avec sa force terriene ;	With y^e^ power of Inferiour
Ainsi parviendras à grande gloire,	Thus doth itt come to greate glory
Par tout le monde ayant victoire.	And of y^e^ World hath victory
C'est des forces toute la force	This is y^e^ power of all powers
Là ou maint se peine & efforce.	Wherein may toyle & labour
Les subtiles choses vaincra	Subtill things itt overcometh
Et les dures transpercera.	& through sollid things it peirceth

(*b*) The next poem in Ashm. MS 58 (pp. 27–48 verso), entitled *Planctus Naturae. The Complaint of Nature against y^e^ erronious Alchymist, by John de Mehung* is a translation of Jean de Meun's *Les Remontrances de Nature à l'Alchimiste errant.* The author, who flourished in the 13th and 14th century was a poet at the Court of Philip the Fair and is said to have added this and the subsequent poem, *La Réponse de l'Alchimiste à Nature,* to Guilleaume de Lorris's Roman de la Rose. A translation of the latter poem follows *The Complaint of Nature* in Ashm. MS 58 (see pp. 29–31 of this paper).

The Complaint of Nature in Ashm. MS 58 begins : ' Alas how sorrowfull am I '. The poem has 986 lines the last of which runs : ' In Gods name to follow Nature '. Underneath, the translator or the copyist has written :

Hallelu :
JHS.

Ferguson [95] mentions the following French editions of both of Jean de Meun's poems : Lyons, 1557, 8°, Paris, 1612, 1613, 8°, without quoting the titles of the respective books. Both are also contained in vol. iii of the above-mentioned edition of *Le Roman de la Rose,* Amsterdam 1735. *Les Remontrances de Nature à l'Alchimiste,* without the other poem, is also printed in the above-mentioned collection of alchemical poems by Pierre Rigaud, Lyons, 1618.

Before examining whether the assignment of the present translation to William Backhouse is justified, a description of the next poem in Ashm. MS 58 will be given, because these two poems are practically one work and so the same arguments apply to both.

(*c*) *The Alchimysts Answere to Nature* (Ashm. MS 58, pp. 50–67) is a translation of *La Réponse de l'Alchimiste à Nature* by Jean de Meun. The French editions of this poem have already been mentioned.

The translation begins : ' Meeke & milde y^e^ Artist you see '. It has 826 lines the last of which runs ' Through Gods good grace & y^rs^, Nature '. Then

[95] Ferguson, *Bibliotheca Chemica,* Glasgow, 1906. vol. i, p. 434.

follows the translation of four lines which seem to have been added to the poem by some former French editor :

> The Artist after such manner
> In humble wise made his Answere
> Before Dame Nature his mistrisse
> By whom he gott soe greate riches.

And underneath, added by the copyist or the translator :

> Hallelu :
> JHS.

Ashmole has added to the translation of Jean de Meun's poem two excerpts from the French originals and various other notes concerning Alchemy, in his own hand. But he did not add the translator's name, as he did under the title of *The pleasant Fountein of Knowledge* (see p. 27 of this paper). Nevertheless, the translation of Jean de Meun's poems has been ascribed to William Backhouse by bibliographers, old and modern [96]. Anthony à Wood forgot to mention the second poem, *The Alchimysts Answere to Nature*, but this omission is, in my opinion, not significant, because both poems are practically one, and their translation is, accordingly, contained in one MS.

Even without Anthony à Wood's contemporary testimony it would have been natural to assign the translation of both of Jean de Meun's poems in Ashm. MS 58 to William Backhouse,

1. because they are written in the unknown writer's hand which is connected with MSS from Swallowfield (see p. 28 of this paper).

2. because they are both signed with a religious formula not belonging to the text, which is similar to the ones closing two translations expressly ascribed to William Backhouse by Ashmole : Ashm. MS 58, pp. 1–23, and Ashm. MS 1395 (see pp. 27 and 32 of this paper).

3. because Ashm. MS 1395 p. 198 (William Backhouse's translation of Solomon Trismosin's Golden Fleece) contains a quotation from Jean de Meun's *The Complaint of Nature*, which in wording and peculiar spelling is identical with the corresponding lines in Ashm. MS 58 p. 37, namely :

> ' This is y^{t} most rich golden chaine
> Which circulerly I mainetaine '.

The assumption that Jean de Meun's two poems were translated by the translator of the first poem in Ashm. MS 58, (Jean de la Fontaine's *Pleasant Fountein of Knowledge*), namely by William Backhouse, becomes likelier still in the light of the last words of a remark in Petrus Borelli's *Bibliotheca Chimica* (Heidelberg, 1656, p. 148) :

[96] Anthony à Wood, *Athenæ Oxonienses*, ed. Bliss, iii, 576 ; Georgius Matthiae, *Conspectus Historiae Medicorum Chronologicus*, Goettingen, 1761, p. 651 ; Ferguson, *Bibliotheca Chemica*, Glasgow, 1906, vol. i, p. 434 ; *D.N.B.*, vol. i, p. 793, like Wood, mentions only *The Complaint of Nature*.

> ' Jean de Mehun a fait la remonstrance de nature a l'Alchimiste Errant, avec la response de l'Alchimiste, en vers François, *avec la Fontaine des Amoureux.*'

The edition uniting the same three poems as Ashm. MS 58, to which Borelli refers, is unknown and probably lost. It is, however, not improbable that it was this edition, on which William Backhouse based his translation.

(*d*) The last article in Ashm. MS 58, *A Treatise of y^e^ Phillosophers stone wrighten by Synesius y^e^ Greeke Abbot, taken out of y^e^ library of y^e^ Emperor*, (pp. 72–88 verso) has not been connected with William Backhouse by any bibliographer.

It begins : ' Whearas y^e^ anciente philo^ers^ have diversly wrighten of this science ', and its last words are : ' . . . might bee permanent firm and stable. Gloria sit Patri '. After an oblique line, indicating the end of the text, follows William Backhouse's motto ' Sache Cache ', and underneath is a short list of authors cited by Synesius, with references to a previous pagination. The MS must originally have been part of another book, as can be seen by this old pagination, which starts at p. 251. It is not unlikely, that Ashmole had it bound together with the translations of Jean de la Fontaine's and Jean de Meun's poems for the very reason that he wanted to unite all short translations by William Backhouse in one volume. The motto *Sache Cache* immediately following the text seems, in fact, to suggest that it was William Backhouse himself who finished writing this text or the original from which it was copied later on. The handwriting is slightly different from that of the preceding translations, but might belong to the same person, who wrote them, but at a different age. A comparison of the text with the one authentic sentence in William Backhouse's handwriting in Ashm. MS 262, p. 60 (see pp. 22–23 of this paper) neither proved nor disproved the identity of the respective writers.

The text is a translation of *Le Vray Livre De La Pierre Philosophale du docte Synesius, Abbé Grec, tiré de la Bibliotheque de l'Empereur*, which is the third treatise in P. Arnauld's *Trois Traitez de la Philosophie Naturelle, non encore imprimez*, Paris, 1612, (pp. 94–103). According to Ferguson [97], this French text of 1612, of which two different issues exist, is the earliest known edition of this treatise. The supposedly Greek original has not been traced. Ferguson considers the assignment of the text to Synesius as doubtful and notes that it does not seem to be of great antiquity, because the name of Geber occurs in it. Borelli (Bibliotheca Chimica, Heidelberg, 1656, p. 201), however, remarks : ' Synesius Abbas, Graece extat in Biblioth. Imperatoris '.—A second French edition appeared in 1659, in Paris. The first English printed edition, entitled *The True Book of the learned Synesius, a Greek abbot, taken out of the Emperour's Library, concerning the Philosopher's Stone* appeared in 1678, in London. According to Ferguson, the translator of this edition was probably Richard

[97] Ferguson, *On the first edition of the Chemical Writings of Democritus and Synesius*, Glasgow, 1894, part I, p. 10.

Russell. At any rate, this translation of 1678 is entirely independent of the translation in Ashm. MS 58, which must be at leat 16 years earlier, because it bears William Backhouse's motto. For a complete bibliography of the later French, English and German printed editions see Ferguson, *l. c.* (footnote 97 of this paper).

(*e*) Ashm. MS 1395 (pp. 1–223) contains only one work : *The Golden Fleece or The Flowre of Treasures. in w^ch is succinctly & methodically handled, the Stone of y^e Philosophers, his excellent effecte & admirable Vertues ; and the better to attaine to the Originall & true meanes of Perfection Inriched with Figures representing the proper Colours to lyfe as they successively appere in the Practise of this Blessed worke. By that greate Philosopher Solomon Trismosin Master to Paracelsus.*

Ashmole has noted on the fly-leaf that this treatise was translated by William Backhouse from French and was copied from his book. (See p. 28 of this paper.)

The title-page of this MS and a copy of the French original's title-page preceding it are written in Ashmole's hand, as well as descriptions of the illustrations of the French original. The text itself is written by the same hand as the other Ashmolean MSS connected with William Backhouse (see above p. 28). It begins : ' The Preface. Alphidius (truly esteemed one of y^e most famous y^e most recom̄ended to posterity . . . ' and ends with four lines of verse, of which the last two run :

The winged feete of Mercury
Are onely lim'd by graue Sobriety.

Then follows an oblique line, indicating the end of the translation, and underneath :

Hallelu, Jah.

and a small triangle with a Hebrew letter (Aleph, Beth, and Lamed) in each of its angles [98].

On p. 1 verso, Ashmole quotes the second title-page and the year of the French original : ' *La Toyson d'Or* etc., A Paris, Ches Charles Sevestre Rue S^t Jaques, 1613, Avec Priviledge du Roy '. According to Gmelin [99], there is an earlier French edition of 1602. Ferguson [100] mentions another French edition of 1612. The original treatise was written in German. The earliest German editions are dated Rorschach, 1598, and Rorschach, 1599. Nothing is known about the author.

[98] According to *Papal Teachings in Freemasonry*, by the Rev. G. Oliver, London, 1866, p. 16–18, this same equilateral triangle with the same Hebrew characters at the intersections is an ancient Symbol of masonry and has reference to the Tetragrammaton and to the Holy Trinity.

[99] Gmelin, *Geschichte der Chemie*, 1797, p. 297.

[100] Ferguson, *Bibliotheca Chemica*, Glasgow, 1906, pp. 469, 470.

The text quotes Jean de la Fontaine's *La Fontaine des Amoureux de Science* and Jean de Meun's *Les remontrances de Nature a l'Alchimiste errant* in several places, so that we can presume, William Backhouse became interested in these poems through reading *La Toyson d'Or*.

None of the English translations in Ashmolean MSS mentioned here under (*a*) to (*e*) has ever been printed.

Conclusion.

Our knowledge of William Backhouse's character and philosophy remains, in terms of fact, sparse, and he, in accordance with his motto, would probably have approved of our comparative ignorance. But the fragmentary mosaic of his life and work which we have here tried to uncover makes it possible to recognise at least the essential features of his portrait. We have seen a quiet, secretive man of an inventive mind, a scholar enveloped since his early days in philosophical research, a lover of rare books, ancient charters and monuments, a lover also of gardens and trees, combining a gift for languages with a graceful poetical vein. We have also seen the devoted father and the generous friend.

But all these qualities would not distinguish William Backhouse from many other country squires of his time. It is his singular devotion to the hermetic doctrine and the fact that a man of his education, his modesty and intelligence could actually claim to possess the secret of the true matter, that assign him an important place in 17th century alchemy. His influence on his spiritual son and heir, Elias Ashmole, cannot be overrated[101].

[101] The assumption that ancestors of William Backhouse were interested in alchemy becomes likelier in the light of a recently discovered note in Ashmole's cipher : *The copy of a Dutch Cypher found inclosed in leade & wrapped within many foulds of velvet decyphered by S^r S: B : translated out of Dutch by Dreble,* (MS Ashm. 1490, f. 353). Ashmole's note (*ibid.*, f. 353^v) reads :

> ' S^r Ed : Dyer having bought the house and all the goods where an old chymist died, caused the same to be pulled down and in the foundation found this piece. He carried it into Germany to have it decyphered (for it was nothing but a considered number of figures) but could not. Then brought it to [left blank]. Stows was secretary to the Earl of Essex, but he could not open it. Then Sir S. Backus did decipher it/and finding it to be written in Dutch, Cornelius Dreble was gotten to translate it,'

Samuel Backhouse, William Backhouse's father, is the only person in Ashmole's pedigree of the Backhouse family whose Christian name begins with the letter S. He died in 1626, at the age of 74. Cornelius Drebbel was born in 1572 and died in 1634. Sir Edward Dyer, whose interest in chemistry & ' Rosie-Crucian ' philosophy are mentioned by John Aubrey, died in 1607 (D.B.N.VI,283). Both Drebbel and Sir Edward Dyer were, therefore, contemporaries of Samuel Backhouse of Swallowfield, and thus the cipher-note makes it indeed likely that it was he who solved the Dutch cipher. It is also interesting to note that, in all probability, William Backhouse's father had relations with Cornelius Drebbel, whose mystical writings on physics and whose inventions are well-known. (On him see G. Tierie, Cornelis Drebbel, Amsterdam, 1932).

THE TEXT OF JOHN DASTIN'S 'LETTER TO POPE JOHN XXII'.

By C. H. Josten.

The transcription of the Latin text generally referred to as *John Dastin's letter to Pope John XXII*, which follows below, is based on two Cambridge MSS:

(*a*) Trinity Coll. 1122, ff. 94^{v}–95^{v}, and

(*b*) Corpus Christi Coll. 99, ff. 18–21.

According to Dorothea Waley Singer, *Catalogue of Latin and Vernacular Alchemical Manuscripts in Great Britain and Ireland dating from before the XVI Century*, Brussels, 1928–31, p. 261–2, the Trinity College MS (*a*) dates from the fourteenth century, and the Corpus Christi College MS (*b*) from the fifteenth.

There is, however, reason to believe that the text of the younger MS (*b*) is nearer to the lost original than that of MS (*a*), which was written about a century earlier. MS (*b*) is, as a whole, shorter. The passages and words contained in MS (*a*) and not in MS (*b*) are not essential to the general argument of the text, so that they may easily have been added in a MS of type (*a*) by a previous copyist who transcribed some still earlier MS of type (*b*). Moreover the text of MS (*b*) appears consistent and intelligible in the very places where the generally longer text of MS (*a*) becomes obscure or shows signs of corruption [1].

Alternatively, it would have to be assumed that the copyist of text (*b*), or one of his predecessors, deliberately simplified and shortened an older and longer text of type (*a*) in places where he could not understand it and therefore thought it to be corrupt, or where it contained, in his opinion, unessential information. This, however, seems unlikely, because some of those words and passages of text (*a*) which do not occur in text (*b*) do not appear to be corrupt or unessential. Some of them are, in fact, perfectly clear and so much to the point that no one, without further evidence, would suspect them of not belonging there or of being superfluous flourishes or repetitions [2].

One may, therefore, conclude that MS (*b*) though written later is a better reproduction of the original than MS (*a*). It is worth noting in this connexion that the supposedly more authentic version (*b*) does not mention Pope John XXII. as addressee of John Dastin's letter.

[1] See *e.g.* p. 40, lines 5–8 of MS (*a*) and the corresponding lines of MS (*b*), also p. 40, line 13, and p. 41, lines 1–5. It seems also significant that text (*b*) with the one exception of the defective passage on p. 38, lines 31 *sqq.*, links up perfectly well without the passages by which text (*a*) is longer.

[2] See *e.g.* p. 35, lines 6 ff. of MS (*a*), also p. 37, line 28–p. 38, line 21; and p. 38, line 31–p. 39, line 2.

The portions of the two texts which differ considerably are printed side by side. Single words and short passages occurring in text (*a*) but missing in text (*b*) are placed in round brackets. The same method has been adopted for the translation which follows the text. The countless mediæval abbreviations of both MSS have been spelt out. Punctuation and spelling have been adapted to the modern usage.

D. W. Singer (*loc. cit.*, p. 262) mentions a fifteenth century fragment of a MS in the British Museum (Add. 10764, ff. 247–249) which, in her view, is perhaps a fragment of the present work. This MS is in fact a transcription of John Dastin's letter. The text closely follows our text (*a*), but is slightly more corrupt. It breaks off towards the end, at the foot of f. 249 recto.

Another transcription of John Dastin's letter to Pope John XXII. is contained in MS Ashm. 1146, ff. 141^{r}–145^{v}. It is written in Elias Ashmole's hand, and, apart from many obvious mistakes, is an almost literal reproduction of our text (*a*). It may, in fact, be its immediate offspring, though there may have been more manuscript copies of John Dastin's letter in Ashmole's time than we know of ; one is, for instance, mentioned in Petrus Borelli's *Bibliotheca Chimica*, Heidelberg, 1656, p. 70. Thus it is possible that Ashmole copied his text from some other MS which was, however, closely related to our text (*a*). As Ashmole's transcription is relatively late and inaccurate, and as it contains no divergence of any importance from text (*a*), its peculiarities have been left out of consideration.

There has been no printed edition, so far, of the text which now follows :

MS (*a*)	MS (*b*)
Trinity College 1122	*Corpus Christi College (Camb.)* 99.
Incipit epistola Johannis Dastine adepiscopum Romanum[3] Johannem XXII. transmissa de alkimia.	Incipit epistola Johannis Dastin.
Hoc est secretum secretorum, impretiabile pretium, opus verissimum,	
et infallibile de compositione nobilissimae materiae, quae secundum traditionem omnium philosophorum transformat omne corpus metallicum in purissimum aurum et argentum, quae essentia conservat, virtute roborat, de sene facit iuvenem et omnem corporis depellit aegritudinem. Haec autem medicina	quod fit tantum de lapide philosophorum.

[3] The words ' episcopum Romanum ' appear to have been written by a later hand. ' Episcopum ' is written on an erasure and probably has replaced the word ' papam '. ' Romanum ' is inserted above the line.

MS (*a*)

habetur fieri tantum de sapientibus philosophorum. Quoniam ita describit Aristoteles ad Alexandrum: Regum decorantur diademata lapidibus pretiosis, quorum pulchretudine visus iuvatur, animus delectatur, dignitas adornatur, et eorum virtute aegritudines gravissimae a corporibus expellentur, sine quibus etiam parum est efficax omnis medicina; et ideo eis utuntur medici in suis medicinis ad gravissimos morbos expellendos.

Est enim dictorum verissimum argumentum, quoniam melior lapis omnium lapidum melius valet ad expulsionem omnium infirmitatum. Melior vero lapis omnium lapidum est secundum Avicennam, qui magis est coctus et igni est proximus,

qui plus sustinet ignem et tardius frangitur ab igne, qui maioris fuerit ponderis, bonum semper existens. Idcirco magis valent lapides pretiosi (ut) rubini et saphiri quam lapides alii, quoniam generantur in loco calidiori propinquius soli cum calore maiori.

Sic etiam in metallis magis valet aurum quam argentum, quoniam magis est coctum, et argentum magis quam cuprum vel aliud metallum. Et sicut rubinus habet in se virtutem omnium lapidum pretiosorum, sic habet aurum (in se) virtutem sive potestatem omnium lapidum ductibilium.

Verum rubinus minus proportionaliter ab elementis complexionatus est secundum Platonem, cum pro maiore parte sui sit ex substantia lucida ut ex aqua clara et coagulatur cum sicco et calore magno. Et ideo non cuditur nec funditur nec

MS (*b*)

plus valet ad expulsionem omnium infirmitatum. Melior vero omnium lapidum est secundum Avicennam, qui magis coctus et igni proximus,

Sic et in metallis magis valet

MS (*a*)

ad alium statum reducitur, nisi ex toto destruatur, quoniam igni ex omni parte contratiatur. Aurum vero, cum sit ex substantia terrae mixta cum aqua per minima, est omogenium igni ex una parte duarum extremitatum et coagulatur cum frigore post actionem caloris in ipsum. Ideo cuditur, funditur, purgatur et igne melioratur, quoniam proportionatum est meliori et aequali complexione et durabiliori compositione. Est enim temperatum (aequali) et meliori et nobiliori compositione prae omnibus aliis lapidibus pretiosis. Post illud immediate est argentum. Defectus vero aliorum corporum est, quod in eis est frigiditas addita aut caliditas diminuta, sicut deficit frigiditas in cupro et ferro, caliditas autem in stagno et plumbo. Aurum igitur et argentum iuste et aequaliter sunt composita et vere sunt temperata prae omnibus lapidibus aliis, quae sub coelo sunt ad speciem nostri lapidis pretiosissimi pertinentia. Nam aurum secundum Hermetem est dominus lapidum, nobilissimus corporum rex et caput ac optimum eorum, quoniam nec ab aere nec ab aqua corrumpitur, nec terra nec ignis minuit ipsum, immo ignis humectat eum et decorat et rectificat. Non enim res comburentes eum comburent, nec corrumpentes corrumpent, eo quod eius complexio est temperata et natura directa in caliditate et frigiditate, humiditate et siccitate, nec in eo superfluum quid est nec minutum. Est itaque aurum in corporibus quemadmodum sol in stellis ; nam magis valet sol

MS (*b*)

Aurum vero, cum sit ex substantia terrae mixtum cum aqua perminima, est coagulatum cum frigore post actio- complexione prae omnibus aliis lapidibus aliis quae sub coelo sunt ad propositum nostri lapidis ergo et argentum iuste et aequaliter

MS (*a*)

omnibus planetis, quoniam dat lumen sursum usque ad saturnum et deorsum usque ad lunam, ita quod per eum complentur fructus terrarum. Sic aurum est pretiosius omnium metallorum, quoniam continet in se omne metallum. Tingit enim ea et vivificat, quoniam est fermentum elixir, sine quo medicina philosophorum nequaquam peragitur, quemadmodum pasta absque fermento non fermentatur. Revera ipsum est sicut fermentum pastae, coagulatum lacti in caseum, et sicut muscus in bonis aromatibus. Et ideo cum Avicenna dico, quod, nisi solem et lunam viderem, pro certo dicerem, quod alkimia non esset vera. Sed quia solem et lunam video, certissime scio, quod vera est alkimia.

MS (*b*)

Nam ista duo corpora debite praeparata sunt[4] sulphur purissimum, quod secundum philosophum in quarto metheorum capitulo si proprie coagulatur Mercurius in verum aurum et argentum. Dicit enim sic: Si argentum vivum fuerit purum, congelabit illud vis Sulphuris albi (et) non urentis. Et illud sulphur est optimum quod possunt (reperire vel) accipere illi, qui operantur alkimiam, ut convertatur illud in argentum. Si vero fuerit sulphur mundum et optimum cum rubore clarum, et si fuerit in eo sulphure vis igneitatis simplicis non urentis, sed temperatae caliditatis, argento vivo existente puro, erit res optima

ad ar . . . ita[5] de sulphure rubro et c[aeteris ?] ad

[4] Presumably the words 'argentum vivum et' are missing here. Another word possibly 'transmutat', seems to have been omitted after 'Mercurius'.

[5] It has not been possible to decipher this highly abbreviated word. The entire passage may be corrupt in text (*b*). MS Add. 10764 (Brit. Mus.) has: 'Et illud est res optima, quam recipi possunt Alkimistae, ut convertant illud in argentum'.

MS (*a*) MS (*b*)

quam reperire possunt alkimistae,
ut ex eo faciant

aurum. Hoc enim scilicet sulphur (ipsum scilicet) argentum vivum convertit (in aurum) per artem, quia non est differentia, utrum hoc fiat in organis naturalibus vel artificialibus. Nam ars imitatur naturam et in quodam corrigit et superat eam, sicut mutatur natura infirma medicorum industria. Caeterum spiritus, quo ista corpora convertuntur in medicinam philosophorum, est tantum argentum vivum, quoniam ipsum secundum philosophum est debita materia liquabilium, quia omnia liquabilia cum liquantur convertuntur ad ipsum. Et miscetur quidem argentum vivum cum istis corporibus liquabilibus, quia est de substantia eorum. Certum quippe est omnem rem esse ex eo in quod resolvitur. Nam gelu convertitur in aquam calore mediante. Verum ergo est ipsum prius aquam fuisse. Sic per artificium omnia metalla resolvuntur in argentum vivum. Ergo ipsa (prius) fuerunt argentum vivum. Et hoc (necessario) supposito solvitur illud Aristotelis quarto metheorum (capitulo) : (Si) sciant artifices alkimiae species metallorum vere transmutari non posse, quod quidem verum est, quia species per se non sunt subiectae actionibus sensibilibus, cum omnino sint incorruptibiles. Sed subiecta specierum optime permutari possunt, quoniam corruptibilia sunt. Et tamen subiecta specierum permutari non possunt, nisi

prius, ut sequitur ex dictis ipsa prius, ut sequitur ex dictis

Aristotelis, ad primam reducantur materiam et sic in aliam formam quam prius

fuerant bene permutantur. Contra erant permutantur. Contra

hoc [6] ratio non stat, quia destructa una forma immediate introducitur alia, ut patet ex operibus rusticorum, qui de lapidibus faciunt calcem et

[6] or 'haec'.

MS (*a*)	MS (*b*)
cineribus vitrum. Sic multo	de cineribus vitrum. Sic multo
fortius potest sapiens studiosus individua speciei corrumpere et novam formam eis introducere, quia	
in centro suae operationis non est, nisi ut ligetur philosophorum tantum medicina. Consistit ex ipsis et suarum operationum	intentio suae operationis non est, nisi ut ligetur oleum in dictis corporibus, quoniam elixir philosophorum tantum consistit ex ipsis et suarum operationum. Aliae
sunt medicinae auri, quibus convenit participare in argento in aliquibus, et in	
aliquibus densificari. Nam in	aliquibus diversificari. Nam in
prima operatione suae compositionis opus auri et argenti per omnia	
convenit. In ultima vero suae	conveniunt. In ultima vero suae
fermentationis disconvenit,	fermentationis disconveniunt,
quoniam fermentum auri aurum est et fermentum argenti argentum est, nec alia sunt fermenta super terram. Alia quippe corpora possibile est quod operentur, sed non erunt bona sicut illa, quia munditiam, quam non habent, dare non possunt. Et ideo dicit philosophus : Corporibus aliis	
quare indiges uti eis, cum possis	quam[7] indiges uti eis, cum possis
habere in istis quod est maioris temperantiae et minoris faecis, (sed) si indigneris corporibus eorum, oportet (primo), ut convertas ea in simile duorum corporum, quod nunquam fiet, donec sol et luna in una medicina quaesita et redacta proiiciantur super ipsa(m), quia Mercurius, cum sit de natura sua	
conversivus, fit unumquodque cum singulis, cui complectitur ex corporibus. Si enim iungatur cum plumbo, erit plumbum, si cum stagno stagnum, si cum ferro ferrum, si cum cupro cuprum.	commiscetur (?) conversivus unumquodque cum singulis, quibus complectitur ex corporibus. Si enim coniungatur cum plumbo, erit plumbum, si cum stagno stagnum, et ita de aliis.
Si autem cum istis duobus aptetur radiis, fit elixir perfectum. Non ergo est operandum nisi cum ista nobiliori materia, quia	

[7] The ' quam ' of text (6) is probably a misreading for ' quare '. Ashmole's transcription (see page 35 of this paper) also reads ' quam '.

MS (*a*)

,si in ea non est, fatigabit animam suam in vanum,

MS (*b*)

res non fiunt nisi secundum earum naturam. Nullus igitur quaerat a natura, quae in ea non est, quoniam fatigabit animam suam in vanum,

nil exinde reportans nisi laborem et rerum ac temporis perditionem.

Ergo medicina haec vera non in viceribus terrae reperitur,

Igitur medicina haec vera non in visceribus terrae praeparatur,

sed arte et operatione perficitur, eo quod a dictis lapidibus nihil fit

sine praeparatione et regimine.

utile sine praeparatione et regimine.

Modi vero sui regiminis sunt quatuor principales, puta solvere, abluere, coniungere et figere. Solvere est corrumpere (et) dividere et materiam primam facere. Abluere est humare, distillare et calcinare. Coniungere est impraegnare

et albare et rubificare. Figere est fermentare, desponsare et incerare. Solutio vertit

dealbare et rubificare. Figere est desponsare, fermentare et dispensare etiam inserare. Solutio vertit illum

lapidem in materiam suam primam, videlicet in aquam, ablutio in aerem, coniunctio in ignem et fixatio in terram. Unde secundum Aristotelem in Secretis Secretorum, cum habueris aquam

ab aere et aerem ab igne et ignem a terra, tunc habebis totum magisterium, quia tunc habebis quatuor elementa in parte bene praeparata. Et elementorum duo sunt lapidea et duo aquatica. Lapidea sunt ignis et terra, aquatica vero aer et aqua.

ex aere, aerem ab igne, ignem a terra, tunc habebis quatuor elementa praeparata optime. Et elementorum duo sunt lapidea et duo aquea. Lapidea sunt ignis et terra, aquea vero aer et aqua.

Aquam autem extrahes a substantia humida, aerem et ignem a substantia sicca. De terra autem non cures ex qua sit substantia, dummodo sit fixa. Nam terra et ignis

MS (*a*)

aerem et aquam

bibunt et desiccant et figunt. Aqua (vero) et aer terram et ignem abluunt, tingunt et perficiunt. Idcirco oportet, ut sit aqua multa et oleum multum, quoniam multitudo tincturae tanta

erit, quanta multitudo olei fuerit.

Igitur secundum Avicennam ideo lapis solvitur, ut in Mercurium convertatur et in

quatuor elementis dividatur, ut

sua prima materia omnino habeatur. Deinde abluitur, ut eius immunditia

abluatur et redeat in colorem

argenti vivi, sicut a principio fuit, et salsedo sui sulphuris minuatur

,ut possit converti de grosso in levi et de spisso in subtili. Tunc lavatur cum aqua Mercurii, ut maiorem recuperet humiditatem, quam perdidit in calcinatione. Postea sublimatur, ut sua materia attenuata magis depuretur et totum hoc actitatur[8],

ut sulphur et argentum vivum munda habeantur super terram de illa materia, de qua aurum et argentum efficiebantur subtus terram. Tunc additur sibi fermentum de illa materia, quam facere volumus, si ad aurum aurum, si ad argentum argentum. Deinde

inseratur ut spiritus in corpore

incorporetur et in eo

figatur, quousque fiat unum cum eo

stans, penetrans et perfundens, tingens et permanens, cuius una pars secundum philosophum convertit mille milia partes cuiusvis corporis in verissimum

MS (*b*)

aquam et aerem

est, quanta multitudo olei fuit.

quatuor elementa dividatur, ut

auferatur et redeat in colorem

.Postea calcinatur, ut eius materia subtilietur et redeat in colorem argenti vivi et possit converti de grosso in levi et spisso in subtili. Tunc lavetur cum aqua Martis, ut maiorem recuperet humiditatem, quantam perdidit in calcinatione. Postea sublimatur, ut sua materia attenuata magis depuretur et hoc totum attenuatum fit[8],

inceratur ut spiritus cum corpore

infigatur, quousque fiat unum cum eo

[8] Text (*b*) which, for once, is longer here than text (*a*) is certainly the more plausible version of this passage.

MS (*a*)

aurum et argentum, secundum quod elixir fuerit praeparatum. Sic virtutem habet efficacem

super omnes alia philosophorum medicinas omnem sanandi infirmitatem, quia, si aegritudo fuerit unius mensis, sanat una die, si (autem) unius anni fuerit sanat duodecim diebus. Si vero fuit

exantiquata magno tempore, sanat

in uno mense. Et ideo haec medicina ab omnibus super omnes (huius) mundi medicinas est oppido[9] perquirenda. Hoc ergo magisterium pertinet ad reges et

huius mundi altiores, quia, qui habet ipsum, indeficientem habet

thesaurum. Et praedicta scripsi quam brevius potui. Explicit epistola Johannis Dastine (ad papam Johannem XXII. missa).

MS (*b*)

aurum vel argentum, secundum quod elixir suum fuerit praeparatum. Sic etiam habet virtutem efficientem

antiquata ex magno tempore, sanat

huiusmodi altiores, quia, qui habet ipsum, indeficienter habet

Translation :[10]

MS (*a*)

Beginning of the letter which John Dastin transmitted to the Bishop of Rome[11] John XXII. about alchemy.

This is the secret of secrets, the priceless treasure, the very true

and infallible work concerning the composition of the most noble matter which, according to the tradition of all philosophers, transforms any metallic body into very pure gold and silver, which conserves

MS (*b*)

Beginning of John Dastin's letter.

work that is done only by the philosophers' stone.

[9] Possibly a copyist's misreading for 'omnino'.

[10] Additions necessitated by the translation and particularly all tentative reconstructions of defective passages have been placed in square brackets.

[11] 'Bishop of Rome' was probably substituted by a later hand for 'Pope'. See footnote 3.

MS (*a*)

[bodies in their] essence, fortifies [them] in [their] virtue, which makes an old man young and drives out all sickness of the body. But this medicine is said to be made only by wise philosophers. For Aristotle describes it thus to Alexander: The diadems of kings are decorated with precious stones that by their beauty exalt the appearance, cheer the mind and embellish dignity, and that by their virtue will drive out the most serious illnesses from bodies, and without which any medicine is of small efficiency; wherefore the physicians use them in their medicines to drive out the most serious illnesses.

MS (*b*)

For what has been said [here] is a very true argument, as the stone that is better than all stones is better fitted for the expulsion of all illnesses. And according to Avicenna the stone better than all other stones is the one (which is) more ripened and (which is) nearest to fire, which better sustains fire and which is less easily broken up by fire, which has more weight [and] remains always good.

Precious stones like rubies and sapphires, therefore, are of

The precious stones [called] rubies and sapphires are, therefore, of greater value than other stones, as they are generated in a warmer place [than the others], nearer to the sun and with greater heat. Thus also gold, among the metals, is more valuable than silver, because it is more ripened, and [thus] also silver is more valuable than copper or any other metal. And as the ruby contains in itself the virtue of all precious stones, thus gold has (in itself) the virtue or power of all ductile stones.

But the ruby has the elements less well-proportioned in its complexion

MS (*a*)

according to Plato, as it consists for its greater part of a lucid substance like clear water and as it is coagulated with dry and strong heat. Therefore, it is not malleable nor fusible, nor is it reduced to a different condition, unless it were totally destroyed, because it is entirely opposed to fire. Yet gold, as it is of an earthy substance which is mixed to an exceedingly small quantity of water,

is homogeneous with fire in respect of one part of the two extremes and (is) coagulated by coldness, after the heat has had its effect on it. It is, therefore, shaped, melted, purged and improved by fire, as it is proportioned to a better and equal complexion and to a more durable composition. For it is tempered

to an equal and better and nobler composition

than all other precious stones. Immediately after it comes silver. But the defect of [all] other bodies is that in them [either] coldness is added or the heat diminished, as [for instance] coldness is deficient in copper and iron, but heat in tin and lead. Accordingly gold and silver are justly and equally composed and are indeed better tempered than all other stones under the sky that have reference to the

kind of our most precious stone. For gold, according to Hermes, is the lord of the stones, the most noble king of all bodies, their chief and [their] best, because neither air nor water corrupts it, nor do earth and fire diminish it, nay fire moistens, decorates and rectifies it. For burning things will not burn it, nor corrupting things corrupt it, because its complexion is tempered and of a

MS (*b*)

Yet gold, as it is mixed of an earthy substance with an exceedingly small quantity of water,

to a better as well as nobler complexion

concept of our most precious stone.

MS (*a*)

direct nature in heat and coldness, in moisture and dryness, nor is there anything in it superfluous or missing. Gold is therefore among bodies as the sun is among the stars ; for the sun excels all planets, as it gives [its] light upwards as far as to Saturn and downwards as far as to the Moon, so that the fruits of the earth are brought to completion by it. In the same manner gold is more valuable than all [other] metals, because it contains in itself [the essence of] any metal. It tinges them and vivifies [them], because it is the ferment of the elixir, without which the philosophers' medicine can by no means be perfected, as [also] dough cannot be fermented without a ferment. It is indeed as leaven to dough, as curd to milk for cheese, and as the musk in good perfumes. And so I say with Avicenna that, unless I saw sun and moon, I would certainly find that alchemy be not true. But as I see sun and moon, I know most certainly that alchemy is true.

those who practise alchemy can find or receive, so as to convert it into silver. If, however, the pure

MS (*b*)

For those two bodies duly prepared are [*argentum vivum* and] [12] very pure sulphur, because, according to our philosopher in the fourth chapter of [his book on] Meteors, Mercury, if he is properly coagulated, [transmutes] [12] into genuine gold and silver. For he says thus : If the *argentum vivum* has been pure, the force of white (and) non-burning sulphur will congeal it. And that sulphur is the best one that

that those can receive who practise . . . . [13] from red sulphur etc. towards

[12] *Cf.* footnote 4,

[13] See footnote 5,

MS (*a*)

and very good sulphur be of a clear red colour and if there be in that sulphur the force of a simple and non-burning fieriness, it will be the best thing that alchemists can find so as to make

MS (*b*)

gold (from it). For this very sulphur converts (this very) *argentum vivum* by art, as it makes no difference whether this happens in natural organs or artificial [ones]. For art imitates nature and, in some respect, it corrects and surpasses her in the same manner, as nature infirm is chaby nged the physicians' industry. Besides, the spirit by which those bodies are converted into the philosophers' medicine, is only *argentum vivum*, because, according to the philosopher, it is the very matter of liquefiables, as all liquefiables when liquefied are converted into it. And *argentum vivum* can, in fact, be mixed to those liquefiable bodies, because it consists of their substance. It is certainly true that all things consist of the substance into which they are resolved. For frost is turned to water by heat. And it is, therefore, true that it has been water until then. Likewise all metals are resolved into *argentum vivum* by artifice. They have been, therefore, *argentum vivum* themselves (before). And by this (necessary) supposition, that [saying] of Aristotle in the fourth (chapter) [of his book] on Meteors is explained:

If the artists of alchemy knew,

The artists of alchemy should know,

that the species of metals can verily not be transmuted, which is, of course, true, because the species as such are not subject to sensible action, as they are entirely incorruptible. But the [individual] subjects of the species can very well be changed one into another, as they are corruptible,

MS (*a*) MS (*b*)

And nevertheless, the [individual] subjects of the species cannot be changed one into another, unless,—as follows from the sayings of Aristotle,—they be first of all reduced to their *prima materia* and thus changed to a form different from the one they had (had) before. Reason is not opposed to this, because, after the destruction of one form, another one is introduced immediately, as is obvious by the operations of country people, who make lime from stones and glass from ashes. Thus a wise and studious man can corrupt the individual [subjects] of a species in an even much stronger manner, and introduce a new form into them, because

there is nothing in the centre of his operation than that the philosophers' medicine be bound. It consists of them, and of his operations are the

the intention of his operation is none other than to bind the oil in the said bodies, because the philosophers' elixir consists only of them and of his operations. There are different

medicines of gold, according as it will be convenient to them to share in some respects [the essence of] silver and to

become dense in others.

differ [from it] in others.

For the work of gold and the work of silver are entirely the same during the first stage of their composition. But in the last stage of their fermentation they differ, because the ferment of gold is gold, and the ferment of silver is silver, and [because] there are no other ferments on earth. It is, of course, possible to work on other bodies, but they will not be as good as these, as they cannot impart a purity which they have not got. And, therefore, the philosopher says:

Why do you need to use these other bodies, [14]

Use [14] other bodies than those you are lacking,

[14] See footnote 7,

MS (*a*) MS (*b*)

when you can have in them something which has greater temperance and less faeces? (But) if you spurn these bodies, you will (first) have to convert them [15] into something like the two [more desirable] bodies, which will never happen, until sun and moon be projected

in and over the one sought for and completed medicine. For Mercury, as he is by his nature convertible, becomes one with the body that he embraces, that is to say, if he is joined to lead, he will be lead, if joined to tin tin, if to iron iron, if to copper copper.

over them in the one sought for and completed medicine. For Mercury, as he is by his nature convertible, is mixed into one with the body he embraces, that is to say, if he is conjoined to lead, he will be lead, if to tin tin, and so forth.

But if with those two he is adapted to the rays [16], he becomes the perfect elixir. Consequently one ought to work only with that nobler matter,

because, if he [17] is not [working] in it, he will tire his soul in vain,

because things develop only according to their nature. No one may, therefore, request from nature things that are not [contained] in her, because he will tire his soul in vain,

and earn nothing by it than labour, loss of things and [loss] of time. This true medicine, therefore, is not found in the earth's bowels, but is perfected by art and by work, as nothing

becomes of the said stones

of any use becomes of the said stones

without [due] preparation and manipulation. There are four principal kinds of manipulation, namely to dissolve, to wash, to conjoin and to fix. To dissolve is to corrupt, (and) to divide and to make the *prima materia*. To wash is to moisten, to distil and to calcine. To conjoin is to

[15] *i.e.* the less desirable bodies.

[16] It is of great interest indeed that the philosophers' *aurum* and *argentum* or at least their emanations are, in this relatively early text, connected with rays.

[17] Probably the artist. The passage seems to be incomplete in text (*a*).

MS (*a*)

impregnate, (and) to whiten and to make red. To fix is to ferment, to betrothe and to incerate. Solution turns the stone into its *prima materia*, that is to say into water, ablution turns it into air, conjunction into fire and fixation into earth. According to Aristotle in his Secrets of Secrets, therefore, if you have had water from air, (and) air from fire, (and) fire from earth, then you will have the whole magistry, because then you will have the four elements in part well prepared.

And of the elements two are stony and two aqueous. The stony are fire and earth, and the aqueous air and water. You will extract the water from a humid substance, and air and fire from a dry substance. But do not worry of what substance the earth may be, if it be but fixed. For earth and and fire drink, dry out and fix air and water. But water and air wash, tinge and perfect earth and fire. Water and oil, therefore, ought to be plentiful, because there will be as much of the tincture, as there was of oil. According to Avicenna, therefore, the stone is dissolved so as to be converted into Mercury and to be divided into the four elements [and] so as to be had entirely in its *prima materia*. Then it is washed in order to clean its impurity and to make it return to the colour of *argentum vivum*, as it had been from the beginning, and in order to diminish the saline matter of its sulphur, so that it may be converted from gross to light and from glutinous to subtle. Then it is washed with water of Mercury so as to recover the greater humidity which it lost by calcination. Afterwards it is

MS (*b*)

fix is to betrothe, to ferment and to dispense, also to incerate. Solution turns that the four elements very well prepared.

water and air. Water and

because there is as much of

. Afterwards it is calcined, so as to subtilize its matter and to make it return to the colour of *argentum vivum*, so that it may be converted from gross to light and from glutinous to subtle. Then it

MS (*a*)

sublimated, so that its refined matter may be further purified the whole of it be activated (?).

MS (*b*)

shall be washed with water of Mars, so that it may recover as much humidity as it lost by calcination. Afterwards it is sublimed, so that its refined matter may be further purified and the whole of it be refined,

so that sulphur and *argentum vivum* shall be had pure above the earth [and] of the same matter, of which gold and silver were made beneath the earth. Then the ferment of that matter which we want to make is added to it, gold if it be gold, silver if it be silver. Then it is incerated so that the spirit may be incorporated and fixed in the body, until it becomes one with it, standing, penetrating and perfusing, tingeing and remaining,—of which, according to the philosopher, one part converts a million parts of any body you may choose into the most genuine

gold and silver respectively, according to which of the [two] elixirs was prepared.

gold or silver respectively, according to which of his [two] elixirs was prepared.

Thus it has effective virtue over all other medicines of the philosophers to cure all infirmity, because, if it were an illness of one month, it cures it within one day, (but) if it were an illness of a year, it cures it in twelve days. But if it were an inveterate illness, it cures it in a month. And, therefore, this medicine ought to be sought for in town[18] by all, and before all other medicines of

this world. This magistery, therefore, is for kings and the great of this world, because he who possesses it has a never failing treasure. And

the world. This magistery, therefore, is for kings and other such exalted persons, because he who possesses it, unfailingly has a treasure. And

I have written the above as shortly as I could. End of John Dastin's letter (sent to Pope John XXII.).

[18] *Cf.* footnote 9.

THE SCIENTIFIC EXPERIMENTS OF SIR WALTER RALEGH, THE WIZARD EARL, AND THE THREE MAGI IN THE TOWER 1603–1617.

By John William Shirley.

For well over three hundred years men of all sorts have speculated about the intellectual activities of the prisoners in the Tower of London during the reign of James I. And considering that James' prisoners included such well-known figures as Sir Walter Ralegh, Lords Cobham and Gray, and Henry Percy, ninth Earl of Northumberland (popularly known at the time as 'The Wizard Earl'), it is understandable how tongues must have wagged and why they have continued to do so.

Sir Walter Ralegh was the first of the illustrious group to be taken to the Tower on December 16th, 1603, following the famous or infamous Winchester trials of November 17th. James' mercy (always to be distrusted) had granted a stay of execution without mitigation of the extreme penalty imposed by the court [1]. And the result, to judge from the early reports on his conduct, was that Ralegh was too worried and ill for some months following his entrance to the Tower to do much but concern himself over his physical ills and possible fate. As the passage of time eased his immediate fears, however, Ralegh—ever an extremely active man—turned to study to occupy his mind. His long-time friend, Sir George Harvey, Lieutenant of the Tower, allowed him considerable freedom—so much so, indeed, that he himself became suspect and was relieved of his post by the timorous James.

Sir William Wade, Harvey's successor, seems to have been selected partly because he was known to be unsympathetic to the Tower prisoners. Not only had he been in charge of taking Ralegh to Winchester for his trial, but he had also been one of the three judges who had there convicted him [2]. On the 19th of August, 1605, a week after taking office, Wade reported to Lord Salisbury on the condition of the prisoners in his charge. All of the 'traitors' had been granted much freedom by Harvey; and Ralegh, housed in the

[1] This fact is clearly brought out by Sir Henry Yelverton, the Attorney General (later himself cast into the Tower for faults found in the Charter of London) at Ralegh's second trial on October 28, 1618. See BM: *Harleian MSS* 39, fol. 360^{r}; *Harleian MSS* 1576, fol. 212^{r}.

[2] Edward Edwards, *The Life of Sir Walter Ralegh*, 2 vols., London, 1868, I, p. 386. Ralegh was not happy about the change, and Wade first interviewed him, he 'used some speeches of his dislike' as Wade reported to Salisbury on August 17th, 1605, though 'sithence he doth acknowledge his error, & seemeth to be very well satisfied'. BM: *Additional MSS* 6178, fol. 12^{r}.

'Bloody Tower', had even been permitted to usurp a large portion of the Lieutenant's garden for his scientific studies. As Wade reported:

> Sr Walter Raleigh hath like accesse of diuers to him, the doore of his chamber beinge alwais open all the day to the Garden, which indeed is the only Garden the Leiuetenant hath, & in the Garden he hath converted a little Hen-house to a still house, where he doth spend his time all the day, in his distillations [3].

With more tolerance than might have been expected, however, Wade did not object to the distillations in his garden and the smells that must inevitably have resulted from them, nor did he suggest that Ralegh be restrained. His chief concern was the fact that the garden walls were decayed to such an extent that 'nothinge can be done in the House [of the Lieutenant], none can come to the house, but he espieth them on all sides' [4]. And even with the proddings of the Council, no restriction was put upon Ralegh until July of 1607, when new Tower ordinances forced all prisoners to return to their chambers at the ringing of the afternoon bell (about 5 p.m.), and not to visit each other or stroll around the interior of the Tower for the remainder of the night [5].

Ralegh, thus, had ample time and facility for his studies; nor was he necessarily alone in his pursuit of them. Among those persons for whom the Privy Council granted free access to Sir Walter were 'Doctor Turner', 'Doctor John a Surgion', and 'Thomas Herryot' [6], the same Hariot who was not only Ralegh's chief steward, but was also one of England's most renowned scientists and mathematicians. It is possible that Doctors Turner and John came to prescribe for Ralegh: it is equally possible they came to consult with him—for though Ralegh possessed no medical degree, his reputation as a compounder of potent medicines was already generally recognized. Queen Anne herself claimed to have received great benefit from Ralegh's medicines, and when Prince Henry lay dying in November of 1612, she prevailed upon Ralegh to compound a cordial for him which, after prolonged discussion by both consulting physicians and the Lords of the Council, was administered [7]. It would be difficult to overestimate the contemporary reputation of a man who, under penalty of death for treason, was consulted to prescribe for the Queen and Crown Prince of mistrustful James.

In a sense, it must have been something of a relief to Sir Walter when,

[3] BM: *Additional MSS* 6178, fol. 14.

[4] *Ibid.*, fol. 14^{v}.

[5] See the 'Ordinances for Government of the Tower' printed in Bayley's Appendix to *Antiquities of the Tower*, II. This is summarized in Edwards' *Life of Ralegh*, I, pp. 490–91.

[6] Hatfield House MSS 115, fol. 121^{r}. This is summarized in Historical Manuscripts Commission, *MSS at Hatfield House*, XVII, p. 443–4.

[7] Edwards' *Life of Ralegh*, I, pp. 511–2.

following the famous Gunpowder Plot investigations, his old friend [8], Henry Percy, ninth Earl of Northumberland, was confined in the Tower with him. Though the Earl was housed across the courtyard in the Martin Tower, the laxity of Tower discipline at the time permitted them to spend whatever time they desired together. And in addition to having common interests and an intellectual curiosity rivalling that of Ralegh, the Wizard Earl was wealthy enough to alleviate some of the distresses of imprisonment and to further their mutual interests. Not only could he afford to construct bowling greens for their use in Lord Cobham's garden [9], but he could and did collect around him men of science and the new learning, support a remarkably fine library of the scientific and occult within the Martin Tower, and (when the fancy struck him) go far beyond the means of impoverished Sir Walter in organised research.

Speculations about the Tower group were current through all this time. One of the earliest accounts of their intellectual activities was given in the public lectures on surgery delivered each Tuesday at Surgeon's Hall. In 1634, Dr. Alexander Read, to illustrate the action of cancerous ulcers of the nose, addressed his audience:

> . . . . This griefe hastened the end of that famous Mathematician, Mr. *Hariot*, with whom I was acquainted but a short time before his death; whom at one time, together with Mr. *Hughes*, who wrote of the Globes, Mr. *Warner*, and Mr. *Turperley*, the Noble Earle of *Northumberland*, the favourer of all good learning, and Mecænas of learned men, maintained while he was in the Tower, for their worth and various literature [10].

A decade or so later, an anonymous Catholic writer preserved some of the current rumors in an account as confused as such rumors usually are:

> Henry the Earle of Northumberland—Brother to Thomas E: of Northumberland—who was beheaded at York for the Northern Insurrection [this was the 8th Earl, the Wizard's father, who died in the Tower under very suspicious circumstances in 1585], was kept in the Tower of London a long time tho at first a protestant (and rather engaged against his Brother in that Northern Tumult.). where for the better passing his time he got seauerall Learned persons to Live and Converse with him.

[8] The Northumberland domestic accounts now preserved at Alnwick Castle contain many references to gambling debts and gifts between the ninth Earl and Sir Walter Ralegh. Many of these are recorded in detail in the Historical Manuscripts Commission, *Appendix to the Sixth Report*, 1877. Though records before 1590 are sketchy, these entries date from before 1588 and extend to 1616, with a break during the years 1593–1599, at which time the two seem to have been estranged.

[9] Alnwick Castle MSS U.I.4: Account of 'Henry Taylor . . . . Clarke of . . . . Kytchens' for 1613–14 contains the following entry: 'The Chardges of Makeinge a bowleinge Alley in my lo: Cobhams Garden wthin the Tower viz for Carpenters woorke and provicon cxij^{s} Brickleyers woorke lxxvij^{s} for the leuellinge of the Alley wth grauell and nec*essaries* lxxij^{s} ix^{d} and for Canvase for shadinge it and woorkemanship xxvij^{s} vj^{d}. In all . . . . xiiij^{li} viiij^{s} iij^{d}' Original addition 6d. short].

[10] Dr. Alexander Read, *The Chirurgicall Lectures of Tumors and Ulcers*, London, 1635, p. 307. John Aubrey cites this passage from a later edition, though he is confused by the medical testimony of Read.

One of them was Mr Heriot whose booke De Algebra, was not long ago printed at Paris, fol. [This, too, is confused : Hariot's treatise on algebra, *Artis Analyticae Praxis*, was posthumously published in London in 1631 under the supervision of Walter Warner. This is probably mistaken for the *Ars Analytica* of François Viète, which, translated into French, was published in Paris twice in 1630, and once in 1631.] he presented Queene Anne with a viol of water which ebbed and flowed at the same time as the Thames, he allways carried about him a golden probe with which every day he tryed if a polipus he had In his nose yeilded fresh blood.—he said, that would giue him at Least tenn days warning of his death by ceasing to bleed.

Another was Mr Warrener the Inuentor probably of the circulation of the blood,—of which subject he made a treatise consisting of two books which he sent to Dr Harvey, who Epitomized, and printed them / In his own Name ; he vsually said that Dr Harvey, did not vnderstand the Motion of the Heart, which was a perfect Hydraulick.

Sr Thomas Ailesbury Master of requests & a great officer In the Mint, told me that he had Warriners book, and that I should haue it, but coming to London he found his Library, wherein were many rare and curious books, plundred, and that amongst the rest taken away ; Dr Pain that very Ingenious and Learned Canon of Christ Church told me, that he had saw and pervsed this book of Warreners.

Mr Robert Hues, after he came out of the Tower associated himself with Mr Cauendish, and accompanied him round the world, purposely for taking the true Latitude of places which he put Into his booke de Globis : after his returne he setled himself in Cht Ch : and there dyed and was buried In the quire . . . . [11].

Late in the century many of the same stories were still going around, to be gathered and perpetuated by John Aubrey. Much of Aubrey's information, he tells us, he had from Dr. John Pell, the seventeenth-century mathematician who was a close friend of Walter Warner until the latter's death in 1640. Aubrey's notes, prepared for Anthony a Wood, carry on the same tale :

When ⟨Henry Percy, ninth⟩ Earle of Northumberland, and Sir Walter Ralegh were both prisoners in the Tower, they grew acquainted, and Sir Walter Ralegh recommended / Mr. Hariot to him, and the earle settled an annuity of two hundred pounds a yeare on him for his life, which he enjoyed. But to ⟨Robert⟩ Hues (who wrote *De Usu Globorum*) and to Mr. Warner he gave an annuity but of sixty pounds per annum. These 3 were usually called *the earle of Northumberland's three Magi*. They had a table at the earle's chardge, and the earle himself had them to converse with, singly or together [12].

Anthony a Wood, printing this material in his *Athenae Oxonienses*, elaborated the story a bit more by drawing Ralegh into the close-knit fellowship :

. . . . when the said earl was committed prisoner to the Tower of London in 1606, to remain there during life [actually the Earl was imprisoned in 1605, left the Tower in 1621, and died in 1632], our author [Thomas Hariot],

[11] Bodleian MSS : *Rawlinson B* 158, 152–3.

[12] Andrew Clark [ed.], '*Brief Lives*', *chiefly of Contemporaries set down by John Aubrey* . . . . 2 vols., Oxford, 1898, I, p. 285–6.

> Hues, and Warner, were his constant companions, and were usually called the earl of Northumberland's three *magi*. They had a table at the earl's charge, and the earl himself did constantly converse with them, either singly or all together, as Sir Walter, then in the Tower did [13].

It is this story, as propounded by Wood, which has become the basis for most current accounts of the activity of the ' Tower scientists '. A compact, well-organized group is envisaged in which discussions of the new learning, supplemented perhaps by actual scientific investigations, served to advance the cause of the ' new philosophy ', science.

At this late date it is extremely difficult, if not impossible to determine with much exactness exactly what went on behind the walls of the Tower, or to sift out the varied rumors now buried in the obscurity of the past. One hitherto unexplored source of possible information still exists, however, that sheds some new light on the men and on their activities. Among the household accounts of the Wizard Earl, many of which are still preserved by the Northumberland family at their ducal seat, Alnwick Castle, are many records of expenditures which illuminate some of these controversial matters. Though unfortunately these records do not exist for the crucial years of the Gunpowder Plot nor for the next, Percy's first year in the Tower with Ralegh, entries from 1607 to 1617 are fairly well represented, and some years are complete. There is here to be found some confirmation of the tales about ' the three *Magi* ', though the close-knit companionship of Ralegh, Percy, Hariot, Hues, and Warner proposed by Wood is obviously false. Some of the expenses illustrate the nature of the ' scientific experiments ' carried on by the group ; others tell much of the library of the scientific and occult which was maintained in the Martin Tower by the Wizard Earl—a library of which many books are still preserved at Alnwick by His Grace, the present Duke. For the sake of clarifying the records, it may be well to consider this new evidence.

The first of the *Magi* to enter the service of Henry Percy was Walter Warner, whose ' mother was frighted, which caused this deformity so that instead of a left hand, he had only a stump with five warts upon it '[14]. When his association with the Wizard Earl began cannot be determined from the Alnwick Castle manuscripts, but he was already in service by 1591, since the earliest extant record of servants' pay for the ninth Earl, the accounting of February 1591 [15], records ' wages ' paid to him. In 1593 it was at his hands that George Peele received his reward of forty shillings for his poem commemorating the award of the Garter to the young Earl [16]. Other early records of payments

[13] Wood's *Athenæ Oxonienses*, 1815 edition, II, 300.

[14] *Op. cit.* note 12, II, 291.

[15] *Alnwick Castle MSS*: U.I.2. Account Roll of ' Roger Thorpe . . . . Payer and Dysburser . . . . ', December 25, 1591—February 18, 1591–2. For the sake of uniformity, dates given in this paper are changed to new-style.

[16] *Alnwick Castle MSS*: U.I.2. ' Thomas Kelton . . . . Receyver '. Annunciation 1592—Annunciation 1595.

to him indicate that Warner was no philosophical confidant of the Earl, but was rather one more of the Earl's large staff of servants [17], drawing as they all did his coal, wood, lodgings, and servants' livery as well as his fixed wages [18]. His salary, £20 in 1595 [19], had been increased to £40 by 1607 [20]—the highest salary paid by Percy to any in the servant group, a fact which indicated that Warner's position was high among the Earl's retainers. His duties, to judge from the special expenses Warner accrued in his service, were primarily those concerned with the Earl's books ; and it was he who travelled fron Syon House, Isleworth, to the Tower and back again with boatloads of books, who attended the bookbinders and supervised the emblazing of the Earl's crescent moon on their covers, and who bought books, maps, papers, and diverse stationery supplies from John Plaskett, John Norton, John Bill, and other London booksellers [21]. Not until he had completed more than a quarter-century of service as a servant, however, was Walter Warner dignified by becoming a ' pensioner ' of the Wizard Earl : the General Account for 1616-17 first removed him from the ranks of servants into the select few [22], though the ' pension ' was the same amount as had been the ' wage '—£40 per annum. So far as can be determined by extant records, it was at this figure that Warner continued to be pensioned (not £60 as Aubrey and Wood reported) for the remainder of the ninth Earl's life. And so far as the records show, Warner's duties as pensioner were the same as his duties as a servant ; though in all probability his new assignment gave him extra leisure for his own intellectual pursuits.

Thomas Hariot, whose contemporary fame was greatest of all the *Magi*, can also be traced in the accounts of the Wizard. Close study of the affairs of both Ralegh and Northumberland show that he was undoubtedly employed by both long before they sojourned in the Tower together. Hariot seems to

[17] ' A Checkrole of Serv^ts^ to the E. of Northumberland ', dated 25 March 1604, listed a total of 53 servants, including (as numbers 28 and 29) ' M^r^ Warner [&] 1 man '. *Alnwick Castle MSS* : *Percy Family Letters and Papers*, VII, 121. Edmund Powton's account of 1608, shows this number cut down to 33. (U.I.3.)

[18] A number of the signed receipts of Walter Warner are still preserved in loose papers in *Alnwick Castle MSS* : U.I.3 and U.I.4.

[19] *Alnwick Castle MSS* : U.I.2. Account of ' Edward ffraunces . . . . Stewarde of his Lp: houshold ', 2 March 1594–21 February 1595 : ' Paid to your Lp: Servantes viz for a yeare ended the xxix^e^ of Sept. 1595. viz Mr Warner xx^li^ . . . . '.

[20] *Alnwick Castle MSS* : U.I.3. Roll of ' Edmunde Powton . . . . Coferer and Steward . . . . ' 19 Feb. 1606—5 Feb. 1607.

[21] Most of the entries to Warner's book-buying are included in the account rolls of ' Edmunde Powton . . . . Coferer ' and ' Rocke Church . . . . Disburser ' in *Alnwick Castle MSS* : U.I.3. The roll of ' Henry Taylor . . . . Clerke of his Lo: Kitchen ' for 11 February 1609–6 February 1610 includes under ' Boordwages ' the item : ' Mr Warner xvij^li^ xvij^s^ . . . . and of a bookebynders beinge there at [Syon House] a moneth stampinge of Bookes xxviij' . . . .'.

[22] *Alnwick Castle MSS* : U.I.4.

have entered Ralegh's service upon his graduation from St. Mary's Hall, Oxford, in February, 1580, or shortly thereafter as something of a mathematical tutor or adviser [23]. As Ralegh's official surveyor of the ill-starred Roanoke venture, Hariot had returned home to write the first English account of the first English colony, and enjoyed considerable contemporary fame, both as an explorer and as an eminent mathematician [24]. Hariot's name first appears in the Northumberland accounts in 1593, at a time when he was Ralegh's chief steward. Among the rewards granted by Percy at the time of his gartering is an item ' to m^{r} heriat $\overset{xx}{\text{iiij}}^{li}$ '[25], an unexplainable gift four times as great as any other made at that time. Other items show him interested in the Earl's affairs during the mid-nineties, [26] though he does not appear as a pensioner until Michaelmas of 1598 [27]. Once on the list, however, his name appears year after year, wherever the pension lists are extant: his pension, £80, is regularly recorded until Michaelmas of 1613; then after a gap in the record of one year, it is recorded as £100 and at that figure remained. These accounts also make it obvious that Hariot's position was high in the Earl's household:

[23] Richard Hakluyt's edition of *De Orbe Novo Petri Martyris Anglerii Mediolanensis*, Paris, 1587, dedicated to Sir Walter Ralegh, Preface, aiiij^{v}, speaks as though Hariot had been a ' long time ' in Ralegh's employ: ' Cùm verò artis nauigatoriae peritia, praecipuum regni insularis ornamentum, Mathematicarũ scientiarũ adminiculis adhibitis, suũ apud nos splendorẽ posse cõsequi facilè perspiceres, Thomam *Hariotum*, iuuenem in illis disciplinis *excellentẽ*, honestissimo salario iamdiu donatum apud te aluisti, cuius subsidio horis successiuis nobilissimas scientias illas *addisceres*, tuí-que familiares duces maritimi, quos habes non paucos, cum praxi theoriã non sine fructu incredibili cõiungerẽt '.

[24] Hariot's *A Briefe and True Report of the New Found Land of Virginia* was first printed (in English) in London, 1588. It was reprinted in 1590 by Theodore de Bry, sumptuously illustrated, at Frankfurt-am-Main in Latin, English, French, and German. It was incorporated in the 1598 and subsequent editions of Hakluyt's *Voyages*, and was being reprinted at Frankfurt as late as 1634. References to Hariot are frequent in the late sixteenth century: See Henry Stevens, *Thomas Hariot, the Mathematician, the Philosopher, and the Scholar*, London, 1900.

[25] *Alnwick Castle MSS*: U.I.2, Accounts of ' Henry fforest . . . . fforeyne paymentes ', 1 July 1592—24 May 1594.

[26] Hariot collected rents from Brampton, Bishopric of Durham, in 1597 and 1598 [U.I.2: Rough Draft, William Wycliff, 1597; Roll ' William Wycliff . . . . Receiver gen*e*rall ' St. Michael, 1597—St. Michael, 1598]; bought books for the ninth Earl U.I.2: ' Edward ffraunceys . . . . Steward ', 12 February 1596–6 May 1598; ' Robert Stapleton . . . . fforeyn Paymaister ', 18 February 1597–6 May 1598]; assisted Walter Warner in a lawsuit [U.I.2., preliminary draft of ' William Wyclife . . . . ac 1596 ']; and received gifts from the Earl [U.I.2. ' Edward ffraunceys . . . . Steward ', 12 February 1596–6 May 1598].

[27] *Alnwick Castle MSS*: U.I.2. ' Edmunde Powton . . . . Coferer ' 20 February 41 Elizabeth–24 February 42 Elizabeth, under ' Pencion ': ' Paid by him likewyse to M^{r} Heryott by his Lp: appoyntment for his Pencion for a yeare ended at Mich*a*el*ma*s last as by his acquittance may appeare $\overset{xx}{\text{iiij}}^{li}$ '.

his name is never entered in the lists of servants, and his pension is frequently listed with the annuities granted the other members of the Percy family [28].

Other evidence in the Alnwick Castle manuscripts indicates that neither Hariot nor Warner was in residence with the ninth Earl in the Tower, however, as might be supposed from the accounts of Aubrey and Wood. Both of them were maintained with the main retinue in residence with the Countess at Syon House, Isleworth, the London home of the ninth Earl, leased from Elizabeth and purchased from James following his accession. At Syon House Warner was evidently housed with the servants in the main house, probably as roommate of John Hippesley, Master of the Horse, since there are frequent entries ' for fyre to m^{r} Hippesley and m^{r} Warner at Syon '[29]. Hariot, on the other hand, had been assigned a house of his own for his scientific pursuits, since the accounts contain numerous references to repairs and alterations ' in M^{r} Heriotts house '[30]. And many of the astronomical observations of Hariot during the period of the Earl's incarceration were clearly dated from his residence in Syon [31].

Of Robert Hues the geographer there is no early mention in the Northumberland records. His name does not appear either among the servants or the pensioners until 1615 [32] when he is shown among the recipients of annuities as receiving £40 (the same general account shows Warner receiving the same stipend as a servant) while Hariot draws his augmented pension of £100. The following year no payment is recorded for Hues, though the lists are extant ; but the general account for 1617 groups the three *Magi* together as pensioners for the first and last time : Hariot at £100 ; Hues at £40 ; Warner at £40—all of them set apart from the servants and included with members of the Earl's family in the list of 'Anuyties & Pencons '[33]. Unfortunately, the records end here, so there is no way of knowing how long these three remained in so elevated a position in the Earl's household. Of Nathaniel Torporley, mentioned by Dr. Alexander Read but ignored by Aubrey and Wood, there is no mention among the extant accounts nor any positive way of associating him with the group, though as the close friend of Hariot and Hues (Hariot named Torporley as his literary executor in his will, 29 June 1621 [34]) he may have later have been added to the group of pensioners during the late years for which no accounts survive.

[28] *Alnwick Castle MSS* : U.I.3. See the ' Brief Abstracts ' for 1608, 1609, 1610, *et esq.*

[29] *Alnwick Castle MSS* : U.I.3. ' Henry Taylor . . . . Clarke of Kitchens ', 8 February 1606—6 February 1607.

[30] *Alnwick Castle MSS* : U.I.4. Account rolls of ' Christopher Ingram . . . . Clarke of Works at Syon ', auditing of March, 1607, 1609, 1611.

[31] Stephen P. Rigaud, *Supplement to Dr. Bradley's Miscellaneous Papers With an Account of Harriot's Astronomical Papers*, Oxford, 1833, p. 22.

[32] *Alnwick Castle MSS* : U.I.4. ' General Accompte 1616 '.

[33] *Alnwick Castle MSS* : U.I.4. ' General Accompte 1618 '.

[34] Copies of Hariot's will are still preserved at Somerset House in London from the Registry of the Archdeaconry Court of London. One copy is reprinted in Stevens, *Thomas Hariot* . . . ., op. cit., note 24.

On the basis of this evidence, it becomes apparent that the studies of Ralegh and the Wizard Earl in the Tower were probably less formal than they have frequently been considered. Though there may have been a compact group of scientists studying and discussing matters of the new learning in the Tower, the group could not have been in consultation until 1615, three years before Ralegh's death, and not perfectly formed until 1617, one year before. And at most, the Tower philosophers could have been together but a few years. Ralegh was executed in late October, 1618, following his unsuccessful final Guiana voyage; Hariot died on the 6th of July, 1621, just a few weeks before the Wizard was released from the Tower to spend the rest of his life in quiet retirement in Petworth, Sussex. As a former servant, now pensioner, Warner may have accompanied him there, but there is no evidence that he ever left London at this time. And the only evidence that Hues may have gone to Petworth with his patron is the entry in the 'True and perfect Inventory' taken at the Earl's death in 1632 recording the furnishings 'In M^r^ Hewes his Chamber'[35]—doubtful evidence at best, since 'Hewes' is a common English name and it is known that Robert Hues the geographer retired to Christ Church, Oxford, and there died in May of 1632, nearly six months before his illustrious friend[36].

Something of the nature of the 'scientific experimentation' of the Earl and his *Magi* may also be gleaned from the entries of the expenditures of the ninth Earl. In the opening years of the seventeenth century, during his observation of the wars in the Low Countries, the Wizard took time out from his military duties to purchase 'a speculatiue glass' (reputed in his own time to be a remarkable crystal ball) and 'quicke siluer verdgrease & Copyr'[37], possibly for alchemical experiments. The earliest extant records of his Tower expenses show the Earl entering whole-heartedly into the distilling operations already under way by Sir Walter Ralegh. Among the miscellaneous expenses for the year are to be found such items as 'for diuerse Cristall glasses bought for your Lo: Vse xxviij^s^'[38]; a general unitemized entry for a 'Stillhouse xij^li^ xiij^s^ v^d^'[39]; and a detailed account by Henry Taylor, 'Clarke of Kitchens', for the expenses involved in building a stillhouse in the Tower[40]:

[35] 'A true and perfect Inventory indented of all and singular the goods Chatles Plate lynnen Carpetts hanginges beddings and household stuffe of the right honorable *Henry Lord Peircie* late Earle of Northumberland deceased taken and appraised the sixt day of december Ano domini 1632 . . . .'. *Syon House MSS*: H.II.l.b.

[36] Hues' memorial in the Cathedral of Christ Church indicates that he died May 24th, 1632, at the age of 79.

[37] *Alnwick Castle MSS*: U.I.3. 'Rocke Churche . . . . Disburser of fforeine paymentes . . . . in the Lowe Countryes'. 1 May 1600–27 March 1602.

[38] *Alnwick Castle MSS*: U.I.3. 'Edmunde Powton . . . . Coferer', 19 February 1606–5 February 1607.

[39] *Alnwick Castle MSS*: U.I.3. 'Briefe Abstract', Audit of February, 1607.

[40] *Alnwick Castle MSS*: U.I.3. 'Henry Taylor', 16 February 1606–4 February 1607.

Stylle house — Paid also by the said Accomptante to Mr Cook for and towardes the makinge of A Styll house in the Towre viz for bricks tyles & necessar*ies* for makinge the furnace xij^{s} vj^{d} to the Carpenter for boordes and quarters to make a byinch sheilfes and Staresteps xxij^{s} x^{d} for xv barres of yron xij^{s} iij^{d} for ij Cestrons of lead and necessar*ies* to them xv^{s} x^{d} for ij stills viij^{s} vj^{d} for a Copper vessell and necessaries to yt vij^{s} vij^{d} for ij funells of platte vij^{d} for ij ioyned stowles iij^{s} vj^{d} for a paire of bellows x^{d} for a fyre rake of yron xij^{d} for a greate padlocke and a Screne xiiij^{d} for a fyle iij^{d} for a bricke Axe xxij^{d} a steile Chesell iiij^{d} a handm*er* and a handsawe for bricke xvj^{d} a paire of Longe Compasses iiij^{d} ij Rulers with plumetts ij^{s} for glasses xxxj^{s} vj^{d} for Canary wyne xlvj^{s} vj^{d} for suger Cenomon water and other materials for Stilling x^{s} ij^{d} for his boordwages vij^{li} xvj^{s} And for diu*er*se other necessaries as Colebasketts handbusketts Syves payles potts pannes packe threed tape wyer Streyners treys pastbord wax pap*er* matts Candlesticks postage and such like xxij^{s} vj^{d} In all — xx^{li} ix^{s} v^{d}

Wynes . . . . for viij gallons of Canarye for the still xxiiij^{s} iiij^{d}

Unfortunately for our purpose, the servant list for this year is no longer extant to give us additional information about Mr. Cook, nor does his preliminary draft to Henry Taylor survive for our inspection.

Henry Taylor's accounts for the following year, 1607, contain another record of expenses 'Necessaries about the stillhouse'[41]:

Neces-saries about the still-house — Paid likewise by the said Accomptant to Mr Roger Cooke for dyu*er*se necessaries about his Lo: Stelhouse in the Tower—viz for bricke and tyles for pavinge the furnace and harth in the stillhowse vij^{s} vj^{d} for a new tynne still xj^{s} viij^{s} for a paire of gouldsmith ballances and a box to kepe them in v^{s} xj^{d} for a pound pile of gouldsmith waights sised & sealed iiij^{s} iiij^{d} for a small yron trivett [viij^{d}] and xv^{t} yron barres [vj^{s} viij^{d}] vij^{s} iiij^{d} for materialls for stillinge xvij^{s} v^{d} vyolles iij^{s} viij^{d} glasses iiij^{s} x^{d} potts x^{s} x^{d} mending the walles about the stillhowse & glasse wyndowes ij^{s} j^{d} for gryndstone of marble and a molar for the same vj^{s} viij^{d} for an yron mortar & pestell iij^{s} x^{d} and other necessaries about the stillhowse xj^{s} ij^{d} In all as by a booke of the p*artic*ulers signed wth the hand of the said Roger Cooke may likewise appere — iiij^{li} xij^{s} iij^{d}

which is recapitulated without addition in the general account for the year. Again, unfortunately, the list of materials used gives no indication of the nature of the distillations, since such items as weights, trivets, and mortars and pestles could be used for almost any type of chemical experiment in that day as in this.

A bit of additional information about the distilling operations of Roger Cook may be gathered from the general accounts of February 6th, 1609 [1610, new style]. In addition to the unitemized expenses here recorded for

[41] *Alnwick Castle MSS*; U.I.3. 'Henry Taylor', Audit of February, 1608.

'Distillacons and necessaries for the same' is the listing, again in the account of 'Henry Taylor . . . . Clerke of his Lo: Kitchens'[42]:

> Provicons by Roger Cooke yor lo: distiller viz for Sondrie provicons for making a distillacone called *Spiritus dulcis* viz sacke viijen gallons xls sugar Candie iiijlb xjs viijd spirits of Roses xijs & for ij glasses to put the said Spiritus dulcis xiiijd In all } lxivs xd

From, this, it would appear that the distillations were designed to furnish esoteric drinks for the Earl's lavish table[43]—an hypothesis further borne out by the fact that the still expenses were carried in the accounts of the 'Clerke of Kitchens'. This same account gives an indication that distilling operations were to be discontinued for some reason, since Taylor adds another item to his expense account for[44]

> . . . . pulling down the Stillhouse and carriinge awaye the brickes vs iiijd And for filling upp the hooles in the walke on the wall [perhaps an indication that the stillhouse was located on the wall now known as 'Northumberland's walk'] xviijd . . . .

and no later account carries any expenditure for either the stillhouse or for distillations performed in it.

If, however, the distillation of spirits came to an end in 1610, experimentation with liquors did not. Robert Flood, disburser for the Earl's privy purse, records expenditures for this purpose in 1613, 1614, and 1615[45]. The 1614 audit records among other personal expenditures the following: 'Spirits of Wyne and aquavitae for makeing of Vsquebathe lxxjs ixd'; 'Muske and ambergrease to put into the spirite of wyne and to make a medecine for his Lo: teethe vjs xd'; and 'Glasses for stronge waters xd'. The following year, Flood's account also contains an item for 'Aqua vitae for the makinge of Usquebath with iijs ijd for vialls . . . . xxxjs viijd'. And in the accounting

[42] *Alnwick Castle MSS*: U.I.3. 'Henry Taylor', 6 February 1608–6 February 1609.

[43] Henry Percy was always noted for the liberality of his table. 'A Character Of the most excellent Lord, the Earle of Northumberland', BM: *MSS Hargrave* 226, fol. 241–3] evidently composed shortly after his succession to his title, reports: '. . . . ffor: as much, as Concernes the Civill, and Constant, Noble waye of lyfe; both in his Howses abroade; and in the Capitall Cittye, of the Standinge Corte where hee is att home; whether wee consider his Coaches, his Horses, his Trayne, his Liveryes, or his Table, which perhappes is (to speake modestlye) one of the best, which ffor a doozin guests, was ever kept in this kingdome, wherein, I meane not onelye the dyett of fflesh, and ffishe; which Aunswers to the stuffe of our Clothes; But I Consider alsoe, the Bread, Wyne, Salletts, Oyle, Vynegar ffruits, Sweet meats, Lynnen; Plate, and Lights, which att the Tables I accompt, As the pettye Toyes of our Attyre . . . .'. According to the *Alnwick Castle MSS*, Percy paid Wade £100 per year for 'libertie to provide [his] owne dyett', and diet expenses for an average year (1608) in the Tower came to nearly £750, not counting this liberty nor the boardwages of his Tower servants.

[44] *Alnwick Castle MSS*: U.I.3. Henry Taylor's account: 6 February 1608–6 February 1609.

[45] *Alnwick Castle MSS*: U.I.4.

of 1616, Flood kindly leaves us the approximate formula employed by the Wizard for the compounding of his Usquebaugh [46]:

> Necessaries for makeinge of Vsquebath viz xviij gallons of aquavita lxij^{s} j^{d} one pynte of spirits of wyne x^{s} amber greese and muske ij scruples viij graynes xiij^{s} vj^{d} and for botles ij^{s} In all iiij^{li} vij^{s} vij^{d}

And in the final accounting of 1617, this tradition is carried on by Francis Ingram as he purchased ' Aquavita for Vsquebath iij gallons [xxvij^{s} iiij^{d}] and ambergreasse [iij^{s} ix^{d}] and muske for the same ' [47].

From the evidence furnished by these Northumberland records, it must be assumed that the ' chemical experimentation ' of the ninth Earl in the Tower was largely concerned with the distillation of liquors and the compounding of medicines. Before 1610, when the stillhouse was in operation, it seems to have been used largely for the manufacture of the potent, almost-pure spirits known variously as *Aqua vita* or *spirits of wine*, derived from distillation and redistillation of stale beer or wine [48]. Later, when the still was no longer at the disposal of the kitchen staff, efforts were directed toward the making of Usquebaugh or ' Irish Aquavita '—by the use of processes of infusion and decantation not requiring distilling apparatus [49]. But from the material lists now extant, there is little or no evidence of any wide-scale experimentation in either chemistry as we know it, or in alchemy.

Other expenses listed in the accounts do show other more serious scientific interests. It is obvious, for instance, that the Earl and his friends were at one time interested in anatomy and medicine. In 1607, Mr. Fotherly was authorized to pay a reward of ten shillings ' . . . . to Doctor turners man y^{t} brought a Sceleton ' [50]. And a decade later, Francis Ingram paid out forty shillings ' . . . . for drawinge the desection of the head ' [51], and Robert Flood was authorized to spend ' . . . . for payntinge two peeces of the Desection of the skull with a case to carrie one to Cambridge viij^{li} iiik^{s} ' [52]. And a large number of references indicate the Earl's interest in geography and cosmography in the payments for ' Mendinge the globes and spheres at the Tower ' [53], ' Globes ij paires lvij^{s} vj^{d} for cutting & devidinge a brasen scale xij^{s} for mendinge and scowringe the brasen spheres viij^{s} for mendinge the globes xviij^{s} ij^{d} ' [54] and the

[46] *Alnwick Castle MSS*: U.I.4. ' Robert fflood ', Account of 1616.

[47] *Alnwick Castle MSS*: U.I.4. ' Francis Ingram ', Account of 1617.

[48] An excellent account of seventeenth-century distillation methods may be obtained from John French's *The Art of Distillation, or a Treatise of the choicest Spagyricall Preparations performed by way of Distillation*, London, 1651. See especially p. 24–26.

[49] *Ibid.*, p. 45–46.

[50] *Alnwick Castle MSS*: U.I.3. Preliminary draft of ' Mr fotherley. 1607 '.

[51] *Alnwick Castle MSS*: U.I.4. Account of Francis Ingram, 1617.

[52] *Alnwick Castle MSS*: U.I.4. Account of Robert Flood, 1617.

[53] *Alnwick Castle MSS*: U.I.3. " Abstracte drawne . . . . forth of seuerall Accomptes ', February, 1609.

[54] *Alnwick Castle MSS*: U.I.4. 1615 account of Robert Flood.

like. Further purchases of a book on horology, ' ij sonne dyalls ',[55] a clock, a watch, and numerous repairs and new springs ' for his lo : watch '[56] indicate a serious consideration of the problem of time, and give credibility to the tradition that the sundial on the south wall of the Martin Tower was placed there by Thomas Hariot for his illustrious patron.

One other indication of the intellectual activities of the Tower group remains in the tangible form of the Earl's books. Through the intervening centuries, most of these have naturally been scattered and destroyed. But in the Percy library at Alnwick Castle, several hundred of them remain intact, bearing the half-moon crest of the Wizard Earl (probably placed there under the supervision of Walter Warner) and containing occasional notes and jottings in his handwriting. As would be expected of a sixteenth and seventeenth century scholar, the majority of these books deal with history and religion [57], but a large number remain to attest the scientific interest of the ninth Earl and his *Magi*. In all probability, these are some of the actual books carried by Walter Warner from Syon House to the Tower and back, and as such form another link between present and past. Just the listing of the titles of representative books known to have been in the possession of the Tower group should give the modern reader some feeling for the interest and intellectual activity of them all : omitting such standard works as Sacrobosco (two copies), Gemma Frisius, Euclid, and the rest, the nature of the library may be gleaned from the following few titles :

CAROLI VVITENSTEIN SEV À PETRA ALBA, SERE-nissimae Margaritae ab au-stria, Medici, *Disceptatio Philosophica de Quinta Chymicorum Essentia.* Accessit Alexandri Carerij Patauini Quaestio An metalla artis beneficio permutari possint. *Cum Gratia* & Priuilegio Caes. Maiest. BASILEAE, PER SEBASTIANVM HENRIC PETRI.

PRAECIOSA AC NOBILISSIMA ARTIS CHYMIAE COLLECTANEA DE OCCVL-tissimo ac praeciosissimo Philosophorum lapide. *Per* IANUM LACINIUM CALA-brum Minoritam Theologorum minimum. NVNC PRIMVM IN LVCEM AEDITA . . . Norimbergae apud Gabrielem Hayn, Ioann. Petrei generum. M. D. LIIII.

[55] *Alnwick Castle MSS* : U.I.4. 1617 account of Henry Taylor.

[56] *Alnwick Castle MSS* : U.I.4. In 1613, Brian Sugden recorded the purchase of ' One Clocke bought of Charles Batchler for his Lor: xx^{li} '. The same year, the General Account listed an expenditure for six pounds, five shillings, ninepence for ' a watche & mending it '. The Earl's watch was repaired in 1612 [Brian Sugden account] and 1617 [Francis Ingram account]. In addition, Henry Taylor recorded in 1611 the purchase of ' a sphere and mendinge thereof xvj^{s} a frame for a Compasse for the wyndes $iiij^{s}$ twoe howerglasses ij^{s} x^{d} and sondrie other small necessaries $iiij^{s}$ xj^{d} '.

[57] See the breakdown of the STC titles by Edith L. Klotz in ' A Subject Analysis of English Imprints for every Tenth Year from 1480 to 1640 ', *Huntington Library Quarterly*, I, 4 [July, 1938], p. 417–19. Of a total of 2079 books considered during this period, 906 or almost 43 per cent. were classed as ' Philosophy and Religion '. See also the discussions of reading taste in Louis B. Wright's *Middle-Class Culture in Elizabethan England*, Chapel Hill, 1935.

IDEA MEDICINAE PHILOSOPHICAE, FVNDAMENTA CONTINENS totius doctrinae Paracelsicae, Hippocraticae, & Galenicae. AVTHORE PETRO SEVERINO DANO Philosopho & Medico . . . BASILEAE, EX OFFICINA SIXTI HENRIC PETRI ANNO M. D. LXXI.

MAGIAE NATVRALIS, SIVE DE MIRACVLIS RERVM NATVRALIVM LIBRI IIII. 10. BAPTISTA PORTA NEAPOLITANO AVCTORE. *Cum Indice.* ANTVERPIAE, Ex Officina Christophori Plantini. M. D. LXXXV.

Iordanus Brunus Nolanus. DE SPECIERVM SCRVTINIO ET LAMPADE COMBINATORIA RAYMVNDI LVLLII Doctoris Heremetae omnisscij, propè modumque diuini. PRAGAE. Excudebat Georgius Nigrinus. Anno. M. D. LXXXVIII.

SEBAST. VERRONIS FRIBVRGENSIS HELVETII PHYSICORVM LIBRI X. Londini, Impensis Geor. Bishop. 1590.
[No crest: Book 9 'On the Soul' heavily annotated by Earl.]

DISQVISITIONVM MAGICARVM LIBRI SEX, IN TRES TOMOS PARTITI. *Auctore MARTINO DELRIO, Societatis Iesu Presbytero* . . . LOVANII, EX OFFICINA GERARDIRIVII. ANNO M. D. XCIX. [3 volumes.]

TRIGA CHEMICA: De Lapide Philosophico TRACTATVS TRES, *Editore & commentatore* NICOLAO BARNAVDO Delphinate Gallo, Philosopho & Medico. NIHIL SINE NVMINE. *Ex Officina Plantiniana,* APVD CHRISTOPHORVM RAPHELENGIVM, Academiae Lugduno-Bat. Typographum. M. D. IC.

De DESTILLATIONE SIVE DE STILLATITIORVM LIQVORVM, QVI AD MEDICINAM FACIVNT, methodo . . . HIERONYMI RVBEI RAVENN . . . VENETIIS Apud Ioannem Baptistam Ciottum Senesem. 1604.

IOANNIS BAPTISTAE PORTAE NEAPOLITANI, DE DISTILLATIONIBVS LIBRI IX. QVIBVS CERTA METHODO, MVLTIPLIcique artificio, penetioribus naturae arcanis detectis, cujus libet mixti in propria elementa resolutio perfectè docetur . . . ARGENTORATI Sumptibus Lazari Zetzneri Bibliop. Anno M DC IX.

DISCOVRS DES SORCIERS, AVEC SIX ADVIS EN FAICT DE SORCELERIE. *ET VNE INSTRVCTION POVR vn Iuge en semblable matiere*: Par HENRY BOGVET Dolanois, grand Iuge en la terre S. Oyan de Ioux, dicte de S. Claude au Comté de Bourgougne . . . TROISIESME EDITION. *A LYON*, chez PIERRE RIGAVD, rue Merciere, au Coing de rue Ferrandiere, à la Horloge. M. D. CX.

ALEXIACVS CHYMIATRICVS: PVRIS PVTIS, MENDACIIS, ATQVE CALVMNIIS atrocissimus IOANNIS OBERNDORFERI . . . A MARTINO RVLANDO . . . Francofurtum . . . ANNO M. DC. XI.

LEXICON ALCHEMIAE SIVE DICTIONARIVM ALCHEMISTICVM, Cum obscuriorum Verborum, & Rerum Hermeticarum, tum Theophrast-Paracelsicarum Phrasium, Planam Explicationem continens. AVCTORE MARTINO RVLANDO, PHILOSOPHIAE, & Med. D. & Caes. Maiest. Personae SS. Medico Etc. Cura ac sumtibus Zachariae Palthenii, Librarii ac D. in libera Francofurti Repub. MDCXII.

TABLEAV DE L'INCONSTANCE DES MAVVAIS ANGES ET DEMONS. *OV IL EST AMPLEMENT* traicté des Sorciers, & de la Sorcelerie. LIVRE TRES-VTILE ET NECESSAIRE non seulement aux Iuges, mais à tous ceux qui viuent sous les loix Chrestiennes . . . Par PIERRE DE LANCRE, Conseiller du Roy au Parlement du Bordeaux . . . A PARIS . . . M. DCXIII.

Magia arcana Coelesti, *Sive*, Cabalisticus, Novus, Artificiosus, & Admirandus Computus DE GOG ET MAGOG . . . per IOANNEM FAVLHABERVM . . . . M. DC. XIII.

NOVVM LVMEN CHYMICVM, *E NATVRAE* FONTE ET MANVALI EXPE-*rientia depromptum, & in duodecim Tractatus diuisum* : Cui accessit, Dialogus Mercurij, Alchymistae & naturae, perquam vtilis. COLONIAE, Apud Antonium Boëtzerum, ANNO M. DC. XIV.

By way of summary, it may be said that the new evidence here presented, based on the actual accounts of expenditures by the ninth Earl, does throw some light on the intellectual activities of the group surrounding him. It is evident that the early stories of the ' three *Magi* ' are based at least in part in fact : Henry Percy did carry on his pension lists the traditional three—Hariot, Warner, and Hues. But the formation of the group was later than supposed by Aubrey and Wood, and it is extremely doubtful if Sir Walter Ralegh had much part in the discussions of the group when it was completely formed. The ' chemical experiments ' of the group were hardly of the advanced stage frequently described, but were more in the nature of distillation of liquors for the Earl's lavish table. Actual interest in science was more concerned with anatomy, astronomy, geography, and horology—and it is very probable that this was more theoretical than practical in scope. Yet it is true that an extensive library, ranging from alchemy, chemistry, mathematics, medicine, and the occult was kept for their use in the Martin Tower. It is unfortunate that none of the *Magi* was a Boswell to keep notes of the philosophic and scientific discussions with which they whiled away many long hours in the Tower [58].

[58] I should like to express my extreme gratitude to the John Simon Guggenheim Memorial Foundation under whose grant this study was made, and to his Grace, the Duke of Northumberland, who so kindly offered me the full facilities of his invaluable library.

ALCHEMICAL PAPERS OF DR. ROBERT PLOT.

By F. Sherwood Taylor.

Dr. Robert Plot (1640–1697) is a fairly important figure in the chemical history of the late seventeenth century. Accounts of his chemical work[1] at Oxford and of his life and scientific work[2] generally have been given by R. T. Gunther. We may recall here Plot's animadversions on chemical matters, contained in his *Natural History of Oxfordshire* (1677) and his *Natural History of Staffordshire* (1686), and the fact that he became in 1683 the first Professor of Chemistry in the University of Oxford, where he read the first chemical lectures and was responsible for the fitting out of the elaboratory in the vaults of the Ashmolean Museum. Among the manuscripts left by him, but now lost sight of, was a copy of his lectures, which bore the title *Praelectiones Chymicae in Schola Naturalis Historiae Oxon. habitae* : Gunther's statement[3] that samples of these are preserved in MS Rawlinson D 888, at the Bodleian, is incorrect, for this MS contains only the title in a list of Plot's MSS. We have therefore no direct evidence as to how far alchemy entered into Plot's lectures, but from his statement (p. 71) that he had kept his connection with the subject secret, we may infer that it did not. In fact Plot's connection with alchemy long remained unknown to his biographers, for the notice of the manuscript which affords the evidence thereof (Sloane 3646 in the British Museum) appeared in Ayscough's *Catalogue of the Manuscripts preserved in the British Museum* (London, 1782, p. 491) as 'ROB. PLOTT [Professor of Chymistry, Oxon.] Collection of papers, chiefly chymical', without any reference to alchemy. Gunther consulted this MS, gave some account of it, and quoted two passages (*op. cit.* note 2, pp. 355–6, 411–3), but failed to point out the alchemical character of its contents or to mention the very interesting papers transcribed on pp. 70–74 below. It may be noted that Gunther commonly omitted to make any mention of the alchemical studies of his subjects, and his work therefore gives a somewhat misleading picture of such men as Fludd, Ashmole and Plot. For this reason it has been thought advisable to give some account of the above MS and to transcribe certain passages.

MS Sloane 3646

MS Sloane 3646, in the British Museum, consists of a volume containing a number of papers of Dr. Robert Plot. Most of these are identified as his by

[1] R. T. Gunther *Early Science in Oxford*, Vol. I. Chemistry, Mathematics, Physics and Surveying. Oxford, 1923, pp. 47–50, 251–61.

[2] R. T. Gunther, *Early Science in Oxford*, Vol. XII. Dr. Plot and the correspondence of the Philosophical Society of Oxford. Oxford, 1939, esp. pp. 333–361.

[3] *Op. cit.* note 2, p. 355.

signature, handwriting or internal evidence, and those that are not may be presumed to have been of interest to him from the fact of their having been preserved among his papers.

CONTENTS.

f. 1. As title, ' Papers of Dr. Robert Plot '.
f. 2. A letter, signed R.P., criticising a translation of Geber that had been submitted to him.
f. 3. ' Observations of the makeing our Sp : V :.
f. 4v. ' Infallible rules for the knowing our Sp V '.
f. 5. ' Of the nature and preparation of our S.V.'
f. 7. ' Menstruum vegetabile ex menstrua minerale '.
f. 9. ' Of the use of secret Menstruums '.
f. 10. ' Of the manifold use of the vegetable menstruum or circulatum minus '.
ff. 11–16. ' Out of the famous Cures of Peter John Faber his third Book of Universall Wisdome '.
f. 17. Inc. ' The spirit of wine is acuated with essentiall salt for the simple vegetable menstruum '.
f. 19. ' The second part. Of Exaltation '.
f. 21. Inc. ' The Mineral Menstruum is called Acetum destillatum . . . . '.
ff. 22–34. Extracts from various alchemical works.
ff. 35–37v. ' Animadversions upon the accidents of the matter '.
f. 38. ' Out of Basill '.
f. 39r. ' Concerning the Chymick Subject '.
f. 39v. ' Of the Chimicall distillation '.
f. 40. A treatise ' *De Arte Chimica* '.
Inc. ' Chimistry is an art w^{ch} toucheth the beginning and progresse and destruction of the 3 kingdoms naturally and artificially, and that per synthesin et Analysin. And is the perfection and complement of Philosophy and medicine.'
f. 42. A treatise entitled ' Of the Chymicall Art ', very similar to the above.
f. 44–47v. ' The rules of practicall Chemistry '. A small part of this section has been reproduced by Gunther (*op. cit.* note 2, pp. 355–6).
f. 48–50. ' Anotations on the manuall operations of Basill Valentine :'.
f. 51. ' Of Menstruums '.
f. 52. Fragment Inc. ' A third way of preparing particularia (?) is by menstruums '.
f. 53. ' Examples of Melanagog '. Medical recipes.
f. 55. ' Of the most secret secret of the more abstruse Chymistry or of the first and onely matter of Menstruums '.
f. 58–61v. ' A censure touching Tachenius '.
ff. 62–64. Inc. ' Distilled vinegar dissolves the stones of crabs, snails, curralls, etc . . . . '.
f. 65. ' Purgeing by the Coralline Secret '.
f. 67. ' An example of the disease of the stone in Van Helmont Pag : 853 : Ch. 4. Par. 13 '.
f. 67v. ' Mr. Cramps experience for Bleeding at the nose, etc '.
ff. 68–69.v. Chapter-headings and page-numbers of a work on ' Chimick Philosophy or physick ' in 3 Parts and 43 chapters.
ff. 70–75. ' Extracts from Flammell ',

f. 76. A petition to the king, asserting the discovery of ' the praeparation of that noble Menstruum . . . . which the Sophi value at some thousands of pounds the pint ' and asking him to found a new College to foster such studies. (Printed by Gunther (*op. cit.* note 2, pp. 411–413).

ff. 77–81. Draft agreements by which an Author knowing the alchemical Secrets is to entrust them to a person who shall put them into practice. This section is transcribed on pp. 70–74 below.

ff. 80v–82. Draft agreement in blank between three parties for the manufacture and sale of Chemical remedies. This is further discussed below.

ff. 83–86v. Articles of agreement between Sir Humphry Dolman of Lincolns Inn Kt and Edward Warner of Holburne Dr. of Physick . . . . 1685. Relates to an invention for preserving food. Plot's name does not appear in this or the next item.

ff. 87–91v. A similar agreement between Doleman and John White.

ff. 91–94v. Extract of a letter of 1667, in a different hand, ' from the Consul of Dantzick to Hevelius concerning some Chymicall, Medicinal and Anatomical Particulars '.

ff. 95 ff. Papers of Robert Kellum, a Kentish alchemist.

The common feature of these notes and papers is their concentration upon the discovery of ' menstrua '. In the paper *On the most secret secret of the more abstruse Chymistry* (f. 55) Plot defines a menstruum as

> ' not a thing dissolving bodies superficially, or dividing them into the most minute particles by corrosion, but a liquor, remaining with the thing dissolved in it, inseparable and altering the crasy or constitution of the thing dissolved by the addition of itselfe into a new thing which neither is nor can be again that which it was '.

This menstruum was evidently sought by Plot in spirit of wine, acuated and rectified to a preternatural subtlety (a dream that goes back at least to the Lullian treatises), for the first ten folios of the MS are concerned with this type of recipe. After a medical section (ff. 11–16) he returns to the subject of menstrua on ff. 17–39v. There follow two papers (ff. 40–43) entitled *De Arte Chimica* and *Of the Chymical Art* respectively, whose formal and syllogistic style suggest that they may be the drafts of his opening lecture at Oxford, then *The Rules of Practical Chemistry* of which Gunther (*op. cit.* note 2, pp. 355–6) quotes seven out of the twenty-three sections. This is definitely alchemical in character. Folios 46–47 are again concerned with the menstrua or kindred subjects. It is evident, then, that Plot had given much attention to these mysterious liquors, which he regarded as fundamental to transcendental medicine and alchemy. It appears from the papers transcribed below that, in or about 1677, he had set up in partnership with two other persons to prepare and sell ' chymical medicines ', and that ' some years ' later he had discovered or otherwise learnt a secret, which seemed to him to be of such importance that he petitioned the king about it, and also tried to make an agreement with some person, whose name does not appear, whereby, in return for the knowledge of

the secret and other considerations he was to take the practical steps necessary for the preparation of the Elixir, the Alkahest, and the Grand Arcanum, and to share the proceeds with Plot.

It is not possible to know whether Plot genuinely believed that he possessed such a secret, but in view of the amount of study represented by his extensive notes, he might well believe himself to have attained to it : alternatively, the secret may have been confided to him by some supposed adept. The transcription that follows will, however, afford the reader the means of arriving at a judgment on this matter, and he will perhaps feel that the document is not one to inspire confidence in its author.

Transcription.

(f. 77v.) As the Author undertakes to shew the true matter of the philosophers upon which the chiefe of the Hermetick philosophers wrought viz. Sendivogius, Basil Valentine, Count Trevisan, Dyonisius Zacharias, Paracelsus, Le Spagnet, Ripley, and our English Anonymus, as by matter of fact he will faithfully and satisfactorily demonstrate even to the confession of the person intrusted with the knowledge hereof ; and will undertake to discover the process how from the same subject matter differently proceeded upon, both the philosophick elixir and the grand liquor Alkahest may according to the greatest of probability be prepared, and so of the rest sett down in an other paper[4], being what the Author proposeth to be performed on his part :

So here further to shew the honesty and integrity of his desyres, in his willingness to communicate the secret to a person so qualifyed and under such circumstances, as the same paper upon the other side of it poynteth at ; where a deposition of three hundred and fiftie pounds is required, as some small (altho unproportionable) compensation for so valuable a treasure, purchased at the great charge and unwearyed paines of the Author, as the result by the blessing of God of his many years charge, study, and labour, he is willing to obviate that grand objection how in case of a disappoynent, viz. that notwithstanding we have the true and right subject of the philosophers, and yet (supposing the worst) do not in a competent time (through a defect or errour in the modus operandi) accomplish our expected ends of preparing the two aforesaid noble Arcana, being the utmost attainable in the sphere of nature and Art : How (I say) he may be satisfyed that he hath not lost his monys, and what expedient may be found that may in some measure answer it upon a disappoyntment in the maine. ffor its confessed that 350 li. is a competent sum of money, and no man ought upon a bare supposition to hazard it, especially if it were upon a person who had no other way of livelyhood to relye upon, but as he expecteth from his attainments herein, driveing at one of these two pillers viz. to be aut Caesar aut nullus, either an Adeptus, or undon to all intents and purposes, as many (we have heard of) have been.

Now I say in order to be thorough, satisfying the intrusted person in this great affair, first he is to consider who he has to deale with all ; next the nature of the thing they are both to be concern'd in : and lastly what expedients may be propos'd, to indemnify the person intrusted from running any great, (nay from any) hazard at all.

[4] *V.* p. 73 infra.

First then as to the Author himself : had the person to be intrusted with this great Arcanum, any cause of suspecting the skill, veracity, and faithfullness of the Author and did think him onely a speculatist, or a vaine boasting chymist : (fol. 77v.) Then its confessed, if he should deposit so much monys upon such uncertainty [it] might prove a very great hazard : But somewhat has already been expressed by word of mouth, concerning the skill, experience, learning, honesty, faithfulness and integrity of the Author, together with the nature of his imploy in the world, all which are partly made public by his writings already extant, (although not upon this subject, being very cautious herein) and will be made more apparent by what he has yet to publish : So that if it was no more then the being satisfyed of the truth of those aforesâid qualifications, now enoff to render him voyd of suspition of any sophistical trapan, he having such a respecte in the world as is able to take off any jealousie of a juggle or undermineing any person whatever : ffor he knows right well, that if he have not honesty (the basis of all worthy designs, and short of which, is unworthy and below every noble Soule) both in his foundation and aime, a deceit of so gross and palpable a nature, would easily be detected and become publick for his disparagement, yea would be a blott in his Eschution, a disgrace to his person, and a blemish upon his name for ever, which he would not be found guilty of for 100 time the worldly advantage here proposed.

2^{ly} (He is to consider the nature of the thing here proposed : As to which the author is able to demonstrate, it is one of the choysest secrets in the world and leadeth to the greatest treasure in nature both as to Medicine and riches. In comparison of which the deposition required bears no proportion and is inconsiderable : onely the Author by such termes with a person so qualifyed, proposeth the accomplishment of his aims thereby, and that is no less then the perfecting of the Magistery. And how many are there, who haveing any fair prospect before them possible and feasible would not make a much greater adventure then is here propos'd ? What difficulty and straits will not men pass through, when they have somewhat amiable and desirable in their eyes? What had will they not lay out monys upon, when they think it a good pennyworth ? And what adventures will they not make, when they hope it will turne to good account ? how much more if some men know they might put in to be adventurers for the Golden Fleece, and have such a fair prospect thereof as is here offered, would they not (think you) put in largely in bauke in order to such a Jason-like navigation, or such an attainement ?

But supposeing (at the worst) a miscarriage, before the ultimate accomplishing of so noble a work : then do but consider how many brave projects which have been plausible enoff have fayled sometime while in embryo, and otherwhile when they have have arriv'd to further degrees of maturity : if therefore because some fayle, no body should make any essays to such noble Attchievements, Ingenuity would be at a stand, Arts would have their remoras, sciences their (f. 78v.) periods and a deepe silence would be put to all Generous attempts. How many vessels richly fraught, loaden with the Easterne and Western treasures whose owners and venturers have like their sayles swelled with expectation of great advantage, have yet by storms been driven upon rocks, sands, and unknown Coasts, and thereby been wrack't ? Nay (which yet speakes worse) how many of them have even fayld in sight of port, and miscaryed in prospect of haven hideing that in the belly of the vast Ocean, which should have made glad the hearts

of the Merchants and have inricht the hand ? Now should all merchants hereby take Alarum and never (because of such losses) venture more, what a sylence would be put to all trade and commerce with forraine parts to the great dammage of mankinde. And the Author doth assure the person intrusted, that here is as great probability for accomplishing this worke, as there is for any merchants vessel to arrive safe at any forraine port. And as great likelyhood of fetching home the golden fleece by Medea's advice, as for their bottoms to bring to haven the rich commodities they venture for : All things in the world (we have not in present possession) are advantures but if the prospect of a designe be fair and promise well, who will not (notwithstanding the difficulties and hazards to be run) be adventurers ; But however how to make the adventure the less hazardous and to make it safe beyond exception, brings me to the third and last consideration which is as followeth.

And that is, how to finde out such an expedient as supposing the worke, as to the accomplishment thereof, should fayle, yet the monys deposited may not be lost, nay may be so far from miscarriage, as that it may turne to good account ; and that is in short, not by ventureing all in one bottom ; my meaning is this ; Suppose the person intrusted with the secret shall deposit 50 li. more : then will the Author ingage to shew the operatour and assist him in prepareing such noble Medicines, out of other subjects, there is to be prepared from the philosophick matter, whereby such an Apparatus Medicinalis may be made as will yield great advantage : where two things are to be considered, first the Nature of the Medicinal Arcana, and next the manner of exposeing them to sayle, or ways of making them turn to a considerable account : As to the first, they are not to be many, but such as are the chiefest sort, most effectual, and highly graduated remedies for cureing deseases, such as are not usually to be had else where : And the latter (viz.) how they are to be put into a way, for advantage, may be thus contrived, that when we have prepared some good Medicines then (if the Grande worke should happen to fayle) the operatour may come in as a fourth person and may undertake the management of that Laboratory here (of which the Authour has a third part) in the preparation of such medicines, as we know will be vendible and turne to good account, which doubtless will be of very considerable advantage to him, as may easily be computed from the advantage that has yearly for some late years past come in as by accounts token of whereof may seene, and considering that the profits that have yet been are inconsiderable to what may be (fol. 78v.) from not onely the improvement of these medicines already in use, but likewise from the probable advantage yet to come from medicines now appeareing and such as by that time may be finished : And if we consider what estates some ordinary fellows from trifleing things have purchased, witness Russell with his powder, Daffy [5] with his elixir, Bromfield with his pills, then how much more probable will it be to raise considerable advantage from some of the choycest medicines (such as [are] really of high efficacy in curing deseases and may easily merit their fame and repute) that are to be prepared especially when put into that way neare bringing them soe (viz.) of making them of esteam amongst physicians (as well of the Colledge as others) and amongst the Nobility,

[5] The nostrums of Daffy (c. 1660) and Bromfield (c. 1677) are described by C. J. S. Thompson, *Quacks of Old London*. London, 1923, pp. 255–6 and pp. 192–3 respectively.

whereby doubtless in a little time great profitts may be made : add to which if he manage the Laboratory he will have (over and besides the share in the advantage aforesaid) 20 li. a year allowed him by the rest of the partners for his management thereof.

So that if the Grand Arcanum (of which we shall have a very fair prospect and sayl much in view) should as I said fayle, yet here is an expedient so proposed as to solve all doubts, and take of all scruples, to the demonstrating the sincerity and honesty of the Author and the indemnifying the person intrusted. Then what would any rational man have more.

Lastly as if not enough yet, to fill the measure of advantage their is an other business the Author is upon with the king, which if it take (as to the Author it seems feasible enoff) the king has promised incouragement therein by being willing to grant a patent for the securing ships (which frequent the Straights and East Indies) from the worme : As to which I have taken care lately to prepare some boards which the king has ordered to be sent and tryed in the Straights, where the worms are : of which it will be perhaps 15 months ere we can have an account of the success : In which concerne the person intrusted shall come in as a co-partner in the advantage thereof, it will be (if it hold) matter of a vast concerne, and great advantage.

That this letter or paper was not a mere fancy or abortive project is shown by the note below, in Plot's hand but in a different ink :

Two a clock or half hour past on Monday is I suppose the times we have appointed to meet :

There follows a note.

The Author doth assure the person concern'd, that not any Aqua fortis, nor any other corrosive liquor is us'd through out the whole work of the Elixir.

On Page 79 there follows a draft agreement :

That which the Author proposeth to be performed on his part is as followeth.

First He will undertake to shew and that not barely notion, but by matter of fact what the true matter of the Hermetick philosophers is viz. What that matter is uppon which the cheifest of the philosophers wrought, viz. Sendivogius, Basill Valentin, Count Trevisan de Spagnet Ripley and our English Anonymus, which is the very key which unlocks all their secrets, by the knowledge of which their choise Hieroglyphicks are unfolded, their emblems unmask'd, their dark riddles and Philosophical Parables laid open, yea their very hidden misteryes discovered : And will show what their Chalibs and Magnet with their Dragon and Serpent, what their wolfe and Lyon, and Sanguis Draconis thence prepared, What the green Lyon, And Sanguis Leonis : What the subject of their Water which is but is not seen, untill it please the Artist : What their Minerall fire, what Paracelsus his true Lili, And what his Electrum : Minerals immatured : what that hidden thing in nature in nature (*sic*) is, out of which it is made, such a Moisture or Menstruum which can dissolve Gold without Violence, yea so sweetly and naturally as Ice in warme water : And shall show where and how hundreds of vulgar Artists faile in some processes, showing the grounds

of their mistakes and errors, by manifestly declaring the true right and genuine process how grounded in nature, And how prosecuted and compleated by Art: 2ndly He will undertake to show, how that same Philosophick matter differently wrought uppon in its proper nature produceth by one process the Elixir: And by the other the Liquour Alkahest which are doubtless two of the noblest products and peerless preparations of nature, and art and will show how they differ: 3rdly He will show how in the road to both these, some Generous medicines may be prepared. 4thly He will show what the true ☿ of the Philosophers is and how prepared What that fountaine is, whose Diana (that beautiful virgin) washeth her selfe from all her naturall or accidental defilements, thereby becoming a fitt bath for ☉ What their water not wetting the hands, what the fontina Bernardi etc. 5thly He will show how the true ☉ or sulphur of the philosophers is prepared from their ☿ And what their ☽ and ☉ is 6thly How from both united and proceeded uppon by a lineall process no less (according to the possibility of natur) can be produced or expected then the true Elixir.

f. 80r. What the Author expects and requires in lieu of his proposals, is as followeth.

First, That the person intrusted be sober, honest, temperate, judicious, faithful, and skilfull in manual operations of vulgar chymistry, or at least has a loving genius and delight that way: And has no concerns to call him off from prosecuting and attending the work.

2ndly That aforesaid person be injoyned to a faithful secrecy, never to divulge either directly or indirectly anythinge of the matter, or process to any person whatsoever, without the knowledge and consent of the Author.

3rdly. That so valuable a treasure (which if it should be sett at its worth might scarcely be valued) purchased at so great and unwearyed paines of the Author, or, that I say it might in some (though smal) proportion be answered, three hundred and fiftie pounds is required to be deposited, and he to be at half the charges of the worke.

4ly. That if the Authour should dye before the finishing the work, then his children to be cared for by the intrusted person, so as to have (at the compleating thereof) that proportion given them, or his executor for their use, which should have been due to the Author if living.

5ly. That the person intrusted with this great Arcanum shall be willing to worke some part at my laboratory here, and the rest in his Laboratory in the country when he shall go down, which perhaps may be shortly.

6. The person intrusted with this Hermetick search is to be obliged never to go upon the process afterwards with any other person or persons but the Author while liveing or his consent; And never to ingage in discource with any pretenders to this mystical Science, upon matters relating the philosophers worke, unles by the Authors leave.

These being agreed to the Author or the person intrusted, is to buy the materials to work upon in quantities at the best hand, best choyse, and as privately as may be. No great varietie of furnaces nor much charge is required throughout the whole work.

Date of the agreement.

Evidence as to the date of this agreement is afforded by the next document in the MS volume, which is a tripartite agreement, also in blank, relating to the making and sale of 'Dropps and Chymicall Medicines'. This agreement is presumably that to which the 'operatour may come in as a fourth person'. It is dated 1677, and, as it had been in operation 'for some late years past', it seems reasonable to suppose that the alchemical agreement must be five or six years later, and may well date from about 1683, the year of Plot's appointment as Professor of Chemistry at Oxford. The fact that Plot writes of 'my laboratory here' and of the other party as about to 'go down' is some slight evidence that he wrote from Oxford. Furthermore, what he says about his employment suggests that he was at the time in an official position, and he did not hold such a position before 1683.

There seems to be little evidence as to whether the parties ever signed the agreement. It is tempting to suppose that Christopher White, Plot's chemical assistant at the Oxford elaboratory, was the 'person intrusted': and this is perhaps supported by the fact that chemical preparations (*i.e.* medicines) were made and sold in the elaboratory[6]; which activity, curious enough in an academic institution, fits very well with the proposals set out in the agreement.

Source of Plot's secret.

It seems reasonable to suppose that Plot at the period under discussion had acquired some knowledge that he did not formerly possess. This might have been acquired by study of the alchemical texts, evidence of which is plentiful in his papers. Alternatively it might have been received from some person who had himself received it by tradition. We know that Elias Ashmole received from William Backhouse in 1653 the secret of the 'true matter'[7]: that Plot and Ashmole were introduced by John Evelyn in 1677, the year of the agreement for making medicines, and that Elias Ashmole appointed Plot as Custos of the Musæum and probably procured his appointment as Chemical Professor. It seems then at least likely that Ashmole, getting on in years and despairing of obtaining the alchemical arcana himself, confided the secret to Plot. The latter's references to 'our English Anonymus' may be references to William Backhouse. Ashmole is very careful not to associate Backhouse's name with alchemical activities in any printed document, and even in MSS commonly sets it down by initials or in cipher. None of the alchemists who style themselves 'Anonymus' is English and if Plot were referring to some well-known writer under a pseudonym, *e.g.* Eirenæus Philaletha, he would surely have used this pseudonym. There seems, then, to be a case for supposing the 'English Anonymus' to be William Backhouse.

[6] Gunther, *Early Science in Oxford*, I, 46.

[7] Note that Plot uses this out of the many phrases that might describe the secret.

If Plot had worked out the process by study we should expect him to be reasonably sure about the method of carrying through the process—usually considered by alchemists to be a comparatively easy part of the work. But if he had the bare secret of the work and no more, it is easy to understand that he would be very uncertain of success, and this appears very clearly in the first document transcribed, where, in spite of his desire to make the best of the prospects, he makes large provisions against failure.

The derivation of Plot's knowledge from Ashmole and Backhouse is, then, a reasonable conjecture, which, however, is unlikely to attain any higher degree of certainty.

Whatever may be the source of Plot's knowledge of the secret of the first matter, it is obvious that his conduct in revealing it as consideration in a commercial contract departs widely from the tradition that the secret should not be sold and should not be revealed except under oath and to a person known to be worthy. However the above attitude to the secret was evidently a counsel of perfection, for it had long been customary for persons to form partnerships to search for or exploit the alchemical secrets, as is shown by the numerous licences recorded in the Patent Rolls as being issued to such partners in the fifteenth century; thus Plot's proposals were not perhaps so unusual as they at first appear. Moreover, he had the reputation of being a grasping character, for it was he who, having borrowed a 'formed stone' from Magdalen Hall refused to return it, with the classic remark that 'it was a Rule among Antiquaries to receive and never restore[8]'. Thus it is consonant with his character that he should have sought to make the most of his supposed knowledge of the alchemical secret.

The decline of belief in alchemy.

It is clear that Robert Plot, about 1683, believed in alchemy—*i.e.* in the preparation of transcendental medicines and substances—but that he found it necessary to be 'cautious', and not to avow the belief in his published writings. Plot had grown up in an age when belief in alchemy was usual, but he had also engaged in the prosecution of the new science, and had indeed taken a prominent part in the work of the Royal Society. It seems clear then, that in England at least, by 1683, though belief in alchemical principles was by no means dead, the alchemical habit of thought had grown so far unfashionable that its avowal would be prejudicial to a man in an official scientific position.

[8] *Hearne's Collections.* Doble, Vol. I, 1701–7, p. 67.

PLATE III.

Ivory statuettes of Sol and Luna.

A PAIR OF ALCHEMICAL IVORY FIGURES.

By F. Sherwood Taylor.

Material relics of alchemy are so rare that any discovery of such requires to be placed on record.

The author had recently the good fortune to secure the two ivory figures, inscribed SOL and LUNA, which are represented on Plate III. No history was available except that they had formed part of the late Sir Arthur Conan Doyle's collection of ivories. Both the figures bear on the back the signature B.G. FC. There is in the Munich Collections[1] a turned cup and cover with putti, vineyard scenes and grapes, said to be signed B.G. and believed to originate from the Netherlands about 1675, but there is some difference in style which would indicate that the cup and figures are not by the same hand. The figures are, however, clearly of the seventeenth century. The likeness of the figure SOL to the Roi Soleil, Louis XIV, has been remarked, and it is possible that the person who commissioned the figures was a Frenchman and intended a delicate compliment to his sovereign.

That the figures represent the alchemical SOL and LUNA is beyond question. While the figure of Sol has no very obvious alchemical attributes, that of Luna is marked out as alchemical by the figure of the winged child, the Stone which is engendered by her union with Sol. The author is not aware of any alchemical pictures that represent Sol and Luna exactly in this style, but as analogy there may be noted the well-known illustration which appears in several alchemical texts[2], showing Senior and Adolphus conversing under a tree bearing the planets and surrounded by seven emblems of the work. In the background on either side are Sol and Luna, the former with sceptre as in the ivory figure, the latter with bow and riding on a fish or dolphin.

The nearest analogue of these figures seems to be the bronze statuette of Luna in the Collection of Archduke Leopold William and recently exhibited at the Tate Gallery. This is probably a study for the projected *Luna as goddess of silver* which with the *Apollo as god of gold*, executed in 1545, should have flanked the fountain in the Zecca (the Mint) at Venice[3].

[1] Bildwerke des Bayerischen National Museums. IV. Elfenbein et. by R. Berlmer, 1926, p. 75, No. 272, pl. 51.

[2] *E.g.* Mylius J. D., *Philosophia Reformata*, 1622, p. 365. Also, *Musæum Hermeticum*, Francofurti, 1625, p. 269.

[3] *Inventarium und verzaichnis ihrer römischen kaiserlichen majestät gemäld und conterfähten, so in der Neuenburg zu Wien Liegen.* (Published by W. Köhler in the *Jahrbuch der Kunstsammlungen des Allerhöchsten Kaiserhauses, XXVI. p. III, VI f*; probably compiled between 1612–18.) No. 5511.

Leo Planiscig. *Die Bronzeplastiken, Statuetten, Reliefs, Geräte und Plastiken.* Vienna, 1924. No. 163.

If anything in alchemy is to be represented by symbolic figures, Sol and Luna are the obvious choice. In exoteric usage, Sol represents gold and Luna silver, but the alchemical usage is much wider. Almost every alchemical text tells us that the stone is engendered by Sol as male, in conjunction with Luna as female, Mercury being the sperm. Sol and Luna thus represent the actual sun and moon, whose emanations enter the earth and therein form the ' mineral mercury ' which is the seed of the metals, which seed is the proper matter of the great Work. Of this seed Sol is the fixed part and Luna the volatile. The later hermetic writers of the period at which these figures were made took a still wider view, supposing that all change in nature was brought about by a little Sun and Moon in bodies,—a view well expressed by Thomas Vaughan in his *Anthroposophia Theomagica* (London, 1650) pp. 24–5 :

> The Sun and Moon are two Magicall principles, the one active, the other passive, this *Masculine*, that *Foeminine*. As they move, so move the wheeles of *Corruption* and *Generation* : They mutually dissolve, and compounde, but properly the moon is *Organum Transmutationis inferioris materiae*. These *Two Luminaries* are multiplied and fructifie in every one particular Generation. There is not a Compound in all Nature but hath in it a little Sun, and a little Moon . . . . what offices soever the two great *Luminaries* perform for the Conservation of the great world in Generall. These two little *Luminaries* perform the like for the *Conservation* of their small *Cask*, or Microcosm in particular.

Sol and Luna are therefore the most fundamental symbols of alchemy and hermetic philosophy, and it may be thought that the unknown B.G. has here created representations of them not altogether unworthy of their profound significance.

REVIEWS.

Bibliotheca Alchemica et Chemica. An Annotated Catalogue of Printed Books on Alchemy, Chemistry, and Cognate Subjects in the Library of Denis I. Duveen. Pp. vii+669, Plates XV. (E. Weil, publisher, London, 1949.) £8 8*s*. 0*d*.

The standard bibliography to which we all resort where alchemy is in question is the *Bibliotheca Chemica* of Ferguson, and it is by comparison with that work that the character of Mr. Duveen's catalogue is most readily seen. On the one hand it supplements Ferguson's catalogue by describing a great many books which are not mentioned therein : on the other hand it does not attempt to give the very full bibliographical and biographical notes which have made Ferguson's work so useful.

Mr. Duveen's library is by no means confined to alchemy ; for he has assiduously cultivated the interesting and hitherto but slightly studied field of books concerned with mineral waters. These waters attracted much attention in the seventeenth and eighteenth centuries and were the occasion of much of the early development of chemical analysis.

Mr. Duveen's catalogue is, in fact, an indispensable instrument of research for the student of alchemy and early chemistry, as well as for the collector of alchemical books. In a work of this kind, accuracy is of the first importance. The reviewer has been able to detect only a small number of misprints, not for the most part such as to mislead an enquirer, and believes that the work may be used with confidence. The fifteen fine collotype plates include an illustration of two pages from Sir Isaac Newton's heavily annotated copy of the *Secrets Reveal'd* of Eirenæus Philaletha (1669).

By the production of such a work as this Mr. Duveen has gone far to justify the continued existence of the private collector. We are at times inclined to deplore the segregation of rare or even unique books in private collections ; but when the owner issues a catalogue more elaborate and informative than any contained in or issued by a public library, he does the world of learning a service which no one else is likely to perform. F. S. T.

Short History of the Art of Distillation from the Beginnings up to the Death of Cellier Blumenthal. By R. J. Forbes. Pp. 405 ; 203 illustrations. (E. J. Brill : Leiden, 1948.) *Gld*. 18.

Professor Forbes has written us a work which is indispensable for the student of the history of alchemy, chemistry or technology. He has surveyed the whole history of distillation from its inception up to the middle of the nineteenth century, in a manner so thorough as to inspire confidence that nothing of importance has been omitted, and the bibliography of 673 items will be a valued instrument of research for those who wish further to pursue any part of this subject. The chapters on Arabic distillation and the making of rose-water and other perfumes seem to the reviewer to be particularly useful for the understanding of the development of distillation both in alchemy and technology, but every part of the book makes a valuable contribution. The work is lavishly illustrated and gives us much that has not been reproduced

elsewhere. We regret, however, the use of the figures of Greek and Arabic distillation apparatus taken from Ferchl and Süssenguth. Plenty of reproductions of these stills can be found without resorting to figures which are far too small to allow the detail to be appreciated.

Professor Forbes treats distillation chiefly as an aspect of technology; he might perhaps have adverted more fully to its philosophical and symbolic significance. The notion of separating the spirit of a body, its essential activity, in a material form, lay at the root of the alchemical technique and chemical theory from the beginning of distillation up to, at least, the seventeenth century. The theory of the 'quintessence' might likewise have received a fuller treatment. But perhaps such additions, though they would have enhanced the merit of the book in the eyes of the historian of alchemy, might have alarmed the sober technologist; and we cannot impugn the author's judgment in thus circumscribing his field.

The only serious criticism of the book must centre on the proof-reading. There are far too many misprints: some of these are harmless, but others, especially where proper names are mis-spelt, are likely to mislead the student and start a trail of error. There are one or two extraordinary statements; e.g., that Thorndike supposed the Testament of Lull to have been fabricated after 1500, this should, perhaps be 1300 or 1350. The statement that John (*sic*) Ripley is said to be the uncle of Roger Bacon leaves the reviewer mystified.

It is much to be hoped that at a future reprinting these and other such matters will be rectified, for the book is a fine piece of work which ought not to be marred by these few flaws. F. S. T.